339

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3924 MEADE ST.
DENVER, COLORADO

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Columbia Records	416	339-1
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Magnavox U21-01AA to 04HK Ch 21 series.
V21-01AA TO 04AA

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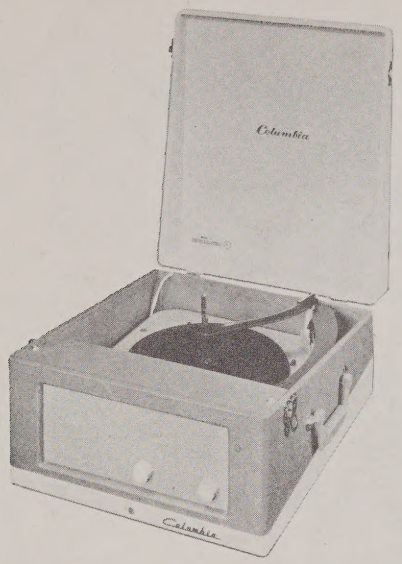
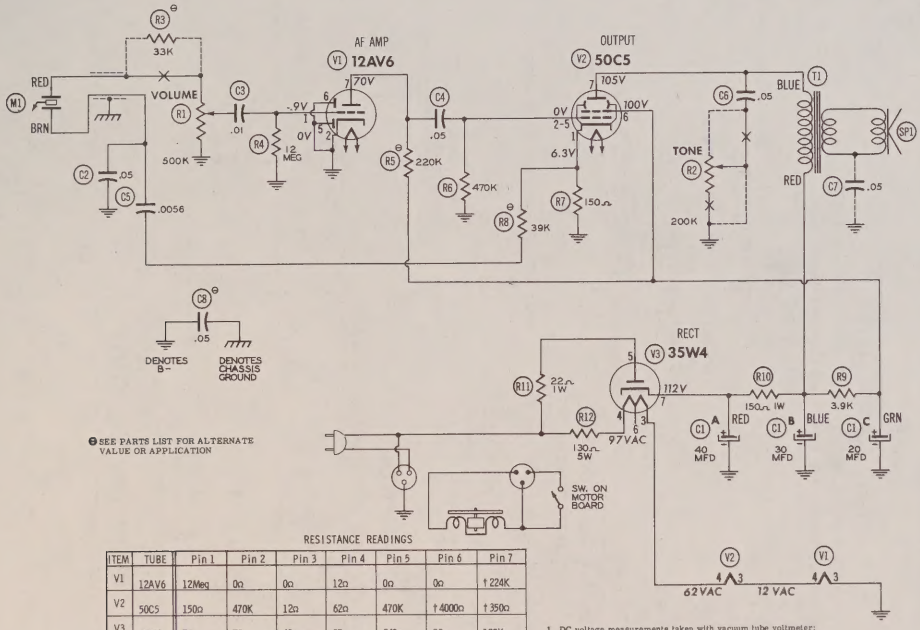


TRADE NAME	Columbia Records Model 416
MANUFACTURER	Columbia Records, 799 Seventh Ave., New York 19, N.Y.
TYPE SET	AC Operated Phono Amplifier With 3 Speed Automatic Record Changer
TUBES (Three)	Types 12AV6 AF Amplifier, 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC-60 Cycles RATING .24 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON THE RECORD CHANGER - SEE SIMILAR V-M MODEL 954B - PHOTOFACT SET 302 - FOLDER 12.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12AV6	12Meg	0Ω	0Ω	12Ω	0Ω	0Ω	†224K
V2	50C5	150Ω	470K	12Ω	62Ω	470K	†4000Ω	†350Ω
V3	35W4	TP	TP	62Ω	97Ω	249Ω	90Ω	100K

ALL MEASUREMENTS TAKEN WITH PHONO MOTOR DISCONNECTED.
† MEASURED FROM PIN 7 OF V3.
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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339-1

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	12AV6	
V2	Output	50C5	
V3	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Columbia Records PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	150		PRS150V4030	BBRT43215	TCT3116	TDLT-3	FMT-312	TVA-3448
B	30	150		20					
C	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Columbia Records PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.05	400		BPD-05	DF-503	CUB4S5		PT415	4TM-S5	
C3	.01	400		BPD-01	D6-103	CUB4S1	GP3-333-103	PT411	4TM-S1	
C4	.05	400		BPD-05	DF-503	CUB4S5		PT415	4TM-S5	
C5	.005	400		SI5000	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C6	.05	400		BPD-05	DF-503	CUB4S5		PT415	4TM-S5	
C7	.05	400		BPD-05	DF-503	CUB4S5		PT415	4TM-S5	Note 1
C8	.05	400		BPD-05	DF-503	CUB4S5		PT415	4TM-S5	

Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Columbia Records PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½		AB-60	A47-500K-Z	Q13-133	U-48	Volume - Note 1
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	Attach to R1A
R2A	200K	½		AB-46	A47-200K-S	Q11-129	U-43	Tone - Note 2
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	Attach to R2A

Note 1. 1Meg control used in some versions.
Note 2. 50K control used in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Columbia Records PART No.	IRC PART No.	NOTES
R3	33K			BTS-33K	Note 1
R4	12Meg			BTS-12Meg	
R5	220K 5%			BTS-220K 5%	Note 2
R6	470K			BTS-470K	
R7	150Ω			BTS-150	
R8	39K			BTS-39K	Note 3
R9	3900Ω			BTS-3900	
R10	150Ω	1		BTA-150	
R11	22Ω	1		BTA-22	
R12	130Ω	5			

Note 1. Not used in some versions.
Note 2. Some versions use 270K in this application.
Note 3. Some versions use 47K in this application.

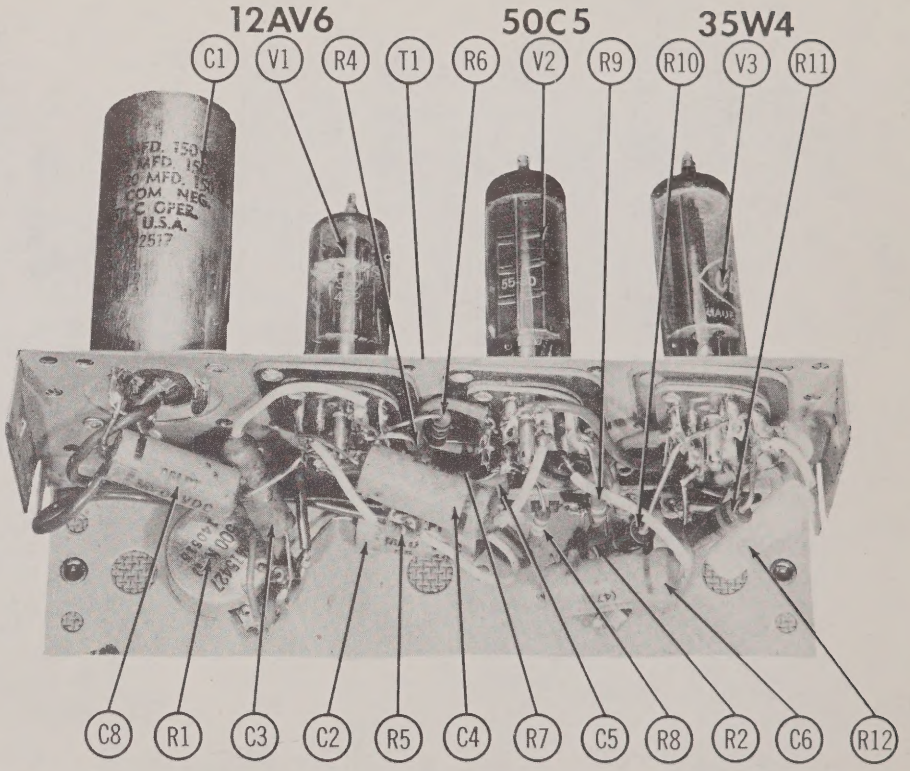
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Columbia Records PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2400Ω	3.3Ω		Z1101	A-3025	A-3332	26S58①	S-12X	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA Columbia Records PART No.	QUAM PART No.	RCA TYPE No.	NOTES
SP1	5"	PM	3.3Ω		5A1	228S1	

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA Columbia Records PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M1		112-TS	A-1 & A-3	46-T	0-1 or S-1 & 0-3	

ASTATIC AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA Columbia Records PART No.	JENSEN PART No.	WALCO PART No.		REMARKS
M2		†CR-55 or ♦CR-55D & †CR-55LP or ♦CR-55LPD	†W-64S & †W-64MGS		† Jewel ♦ Diamond

PHOTOFACT* Folder

*TRADE MARK

RETMA MEMBER

CORONADO MODELS TV1-9356A, TV1-9357A (Code 24T9)

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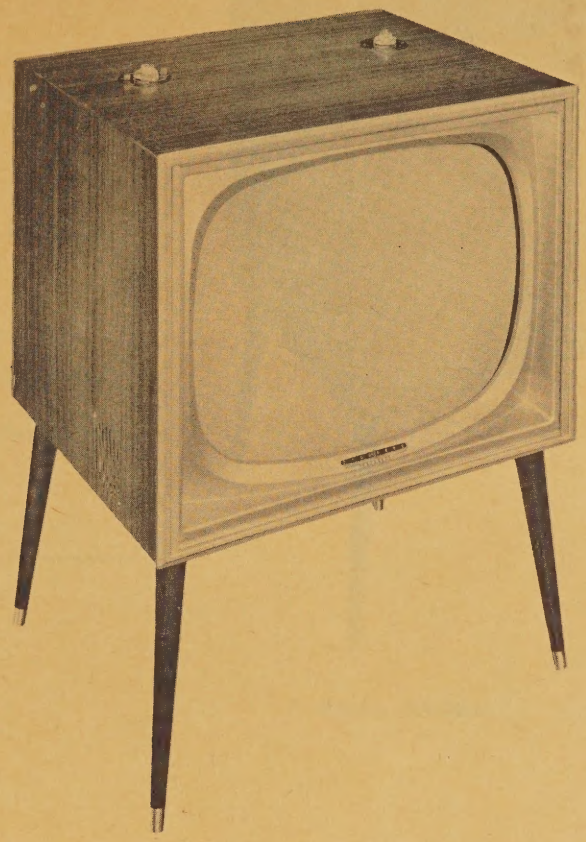

CORONADO MODELS TV1-9356A, TV1-9357A (Code 24T9)

CORONADO MODEL TV1-9356A

TRADE NAME	Coronado Models TV1-9356A, TV1-9357A (Code 24T9)
SUPPLIER	Gamble-Skogmo, Inc., 15 N. 8th. St., Minneapolis, Minn.
TYPE SET	Television Receiver
TUBES	Sixteen
POWER SUPPLY	105-115 Volts AC-60 Cycle RATING 1.6 Amp. @ 115 Volts AC
TUNING RANGE	Channels 2 thru 13, Video IF 26.75MC, Sound IF 22.25MC (Intercarrier)

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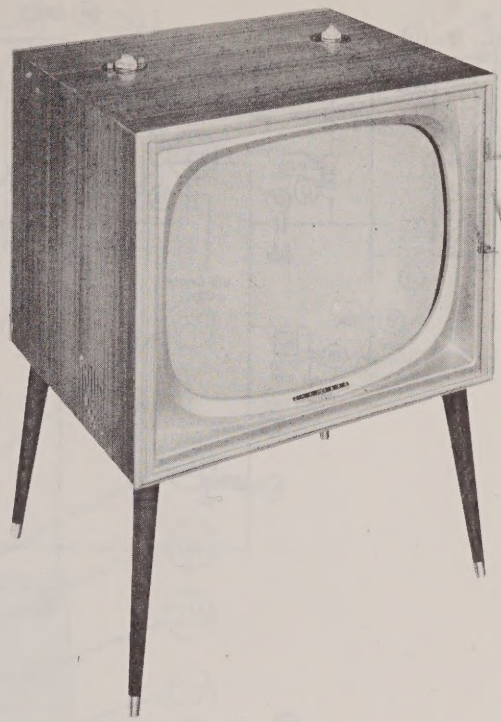
DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 7 push-on type control knobs from top panel of cabinet.
2. Lay receiver face down on a soft surface.
3. Remove 13 metal screws. Remove rear cover.
4. Remove 2 metal screws holding AC interlock-antenna bracket.
5. Disconnect speaker leads, picture tube socket, HV lead and yoke plugs.
6. Remove 4 chassis bolts. Remove chassis.
7. Remove 2 speaker nuts. Remove speaker.



MODEL TV1-9356A

CORONADO MODELS TV1-9356A, TV1-9357A (Code 24T9)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removing the channel selector and fine tuning knobs.

PICTURE TUBE SAFETY GLASS CLEANING

Remove side strips on front of cabinet holding glass in place. Remove strips and safety glass. Use extreme caution when removing safety glass.

SERVICE ADJUSTMENT LOCATION

See tube placement chart on page 5.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

To adjust the horizontal oscillator, it is necessary to remove the rear cover and supply power to the chassis. Adjustment is located on tube side of the chassis. Set the horizontal hold control at the center of its range and adjust the horizontal frequency coil (L22) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the buzz control (R7) located on the tube side of chassis for maximum volume and minimum buzz.

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

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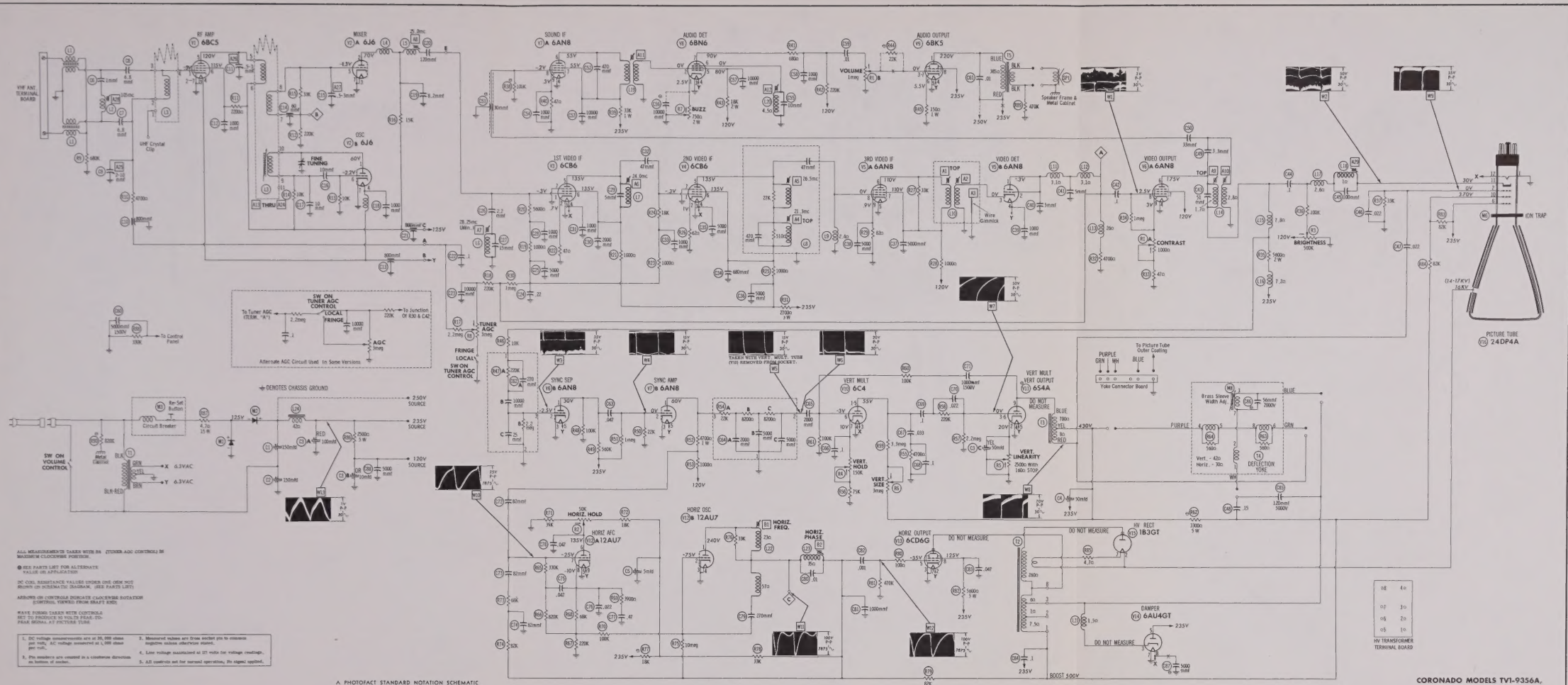
RF AMP V1 6BC5
MIXER V2A 6J6
OSC V2B 6J6
SOUND IF V7A 6AN8
AUDIO DET V8 6BN6
AUDIO OUTPUT V9 6BK5
1ST VIDEO IF V3 6CB6
2ND VIDEO IF V4 6CB6
3RD VIDEO IF V5A 6AN8
VIDEO DET V5B 6AN8
VIDEO OUTPUT V6 A 6AN8
SYNC SEP V6B 6AN8
SYNC AMP V7B 6AN8
VERT MULT 6C4
VERT MULT VERT OUTPUT 6S4A
HORIZ AFC V12A 12AU7
HORIZ OSC V13B 12AU7
HORIZ OUTPUT V13 6CD6G
HV RECT V15 1B3GT
DAMPER V14 6AU4GT
PICTURE TUBE V16 24DP4A
VHF ANT TERMINAL BOARD
VHF Crystal Clip
FINE TUNING
THRU
SW ON TUNER AGC CONTROL
To Tuner AGC (TERM. "A")
LOCAL
FRINGE
To Junction Of R30 & C42
AGC
Alternate AGC Circuit Used In Some Versions
To Control Panel
TUNER AGC
FRINGE
LOCAL
SW ON TUNER AGC CONTROL
DENOTES CHASSIS GROUND
Re-Set Button
Circuit Breaker
SW ON VOLUME CONTROL
Metal Cabinet
BLK
GRN
YEL
RED
BLK-RED
X 6.3VAC
Y 6.3VAC
250V SOURCE
235V SOURCE
120V SOURCE
HORIZ. HOLD
HORIZ. FREQ.
HORIZ. PHASE
VERT. HOLD
VERT. SIZE
VERT. LINEARITY
CONTRAST
BRIGHTNESS
VOLUME
BUZZ
Speaker Frame & Metal Cabinet
To Picture Tube Outer Coating
Yoke Connector Board
PURPLE
GRN
WH
BLUE
Brass Sleeve Width Adj.
DEFLECTION YOKE
Vert. - 42Ω
Horiz. - 30Ω
ION TRAP
(14-17KV) 16KV
HV TRANSFORMER TERMINAL BOARD
DO NOT MEASURE
BOOST 500V
ALL MEASUREMENTS TAKEN WITH R6 (TUNER AGC CONTROL) IN MAXIMUM CLOCKWISE POSITION.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM. (SEE PARTS LIST)
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 90 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements are at 20,000 ohms per volt; AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction as bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, No signal applied.
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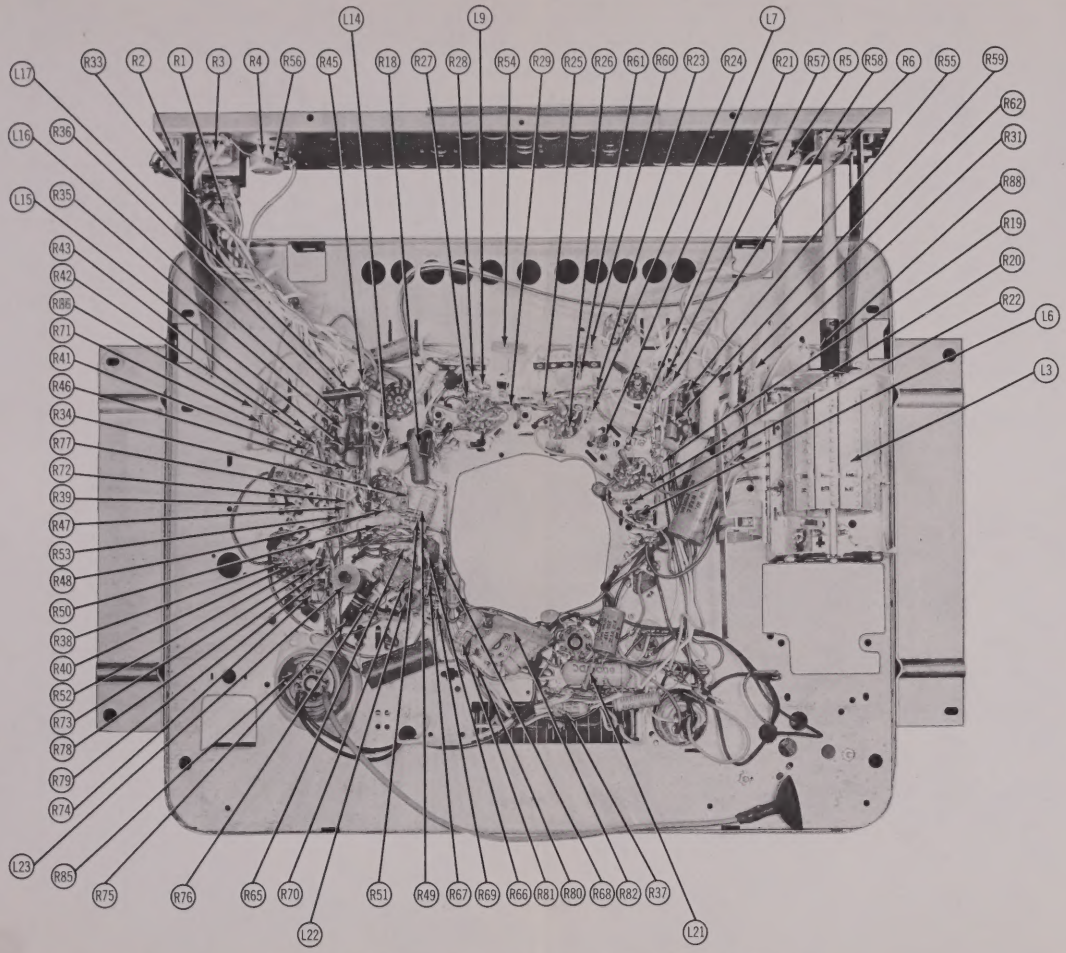
CORONADO MODELS TV1-9356A, TV1-9357A (Code 24T9)

CORONADO MODELS TV1-9356A, TV1-9357A (Code 24T9)



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CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

TUBE PLACEMENT CHART

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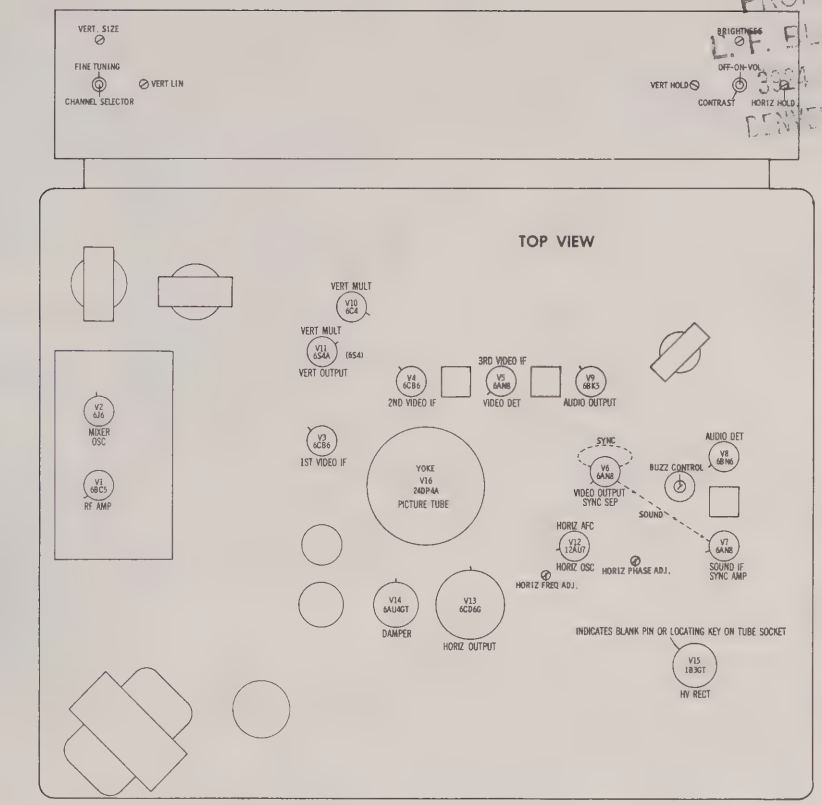
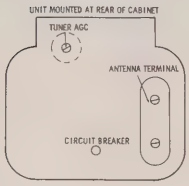




TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **Selenium Rectifiers (M1 & M2)**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V2, V3, V4, V5, V6**
No pic, no sound, has snow - **V1, V2, V3**
No pic, has sound, has raster - **V6, V16**
Has pic, no sound - **V7, V8, V9**

SYNC FAILURE
No vert. sync - **V7, V10, V11**
No horiz. sync - **V7, V12**
No vert. or horiz. sync - **V6, V7**

SWEEP FAILURE
No raster, has sound - **V12, V13, V14, V15, V16**
No vertical deflection - **V10, V11**
Poor vert. linearity or foldover - **V10, V11**
Poor horiz. linearity or foldover - **V12, V13, V14**
Narrow picture - **V12, V13, V14, V15, M1, M2**
Vert. off freq. - **V7, V10, V11**
Horiz. off freq. - **V7, V12**

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use an isolation transformer to protect the test equipment.
The high voltage lead should be securely taped away from the chassis. Do not remove the horizontal oscillator tube (V12) to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to pin 8 (grid) of 6AN8 (V5). Low side to chassis.	25MC (10MC Swp)	23.9MC 26.3MC	Any	Vert. amp. thru 10K to point (A). Low side to chassis.	A1, A2, A3	Connect a short jumper from pin 5 (plate) to pin 6 (screen) of 6CB6 (V4). Adjust for response similar to Fig. 1 with markers at 90%. A3 is a coupling rod and affects bandwidth. Remove short from pin 5 to pin 6 of V4.
2.	Direct	High side to an ungrounded tube shield floating over converter tube. Low side to chassis	Not Used.	21.3MC Unmod.	"	USE VTVM DC probe to point (A). Common to chassis.	A4	Adjust for maximum deflection.
3.	"	"	"	26.5MC	"	"	A5	Adjust for maximum deflection. Repeat step 2.
4.	"	"	"	24MC	"	"	A6	Adjust for maximum deflection. Attenuate generator output to maintain not more than 2 volts at VTVM.
5.	"	"	"	28.25MC	"	"	A7	Adjust for minimum deflection.
6.	"	"	"	25.0MC	"	"	A8	Adjust for maximum deflection. Attenuate generator to maintain not more than 2 volts at VTVM.
7.	"	"	25MC (10MC Swp)	21.3MC 23.8MC 26.65MC	"	Vert. amp. thru 10K to point (A). Low side to chassis.		Check for response similar to Fig. 2. Rock A8 for flat response. Increase sweep generator output and use high scope gain to view 22.25MC trap region. Adjust A4 so that 21.3MC appears at peak of pop-up portion preceeding trap notch. 22.25MC should fall in trap notch. If response is not similar to Fig. 2, repeat steps 1 thru 7.

SOUND IF ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket. Tune in a TV signal and adjust the fine tuning control until sound bars just appear in the picture. Adjust A29 fully counter-clockwise, and then clockwise until the horizontal scanning lines are smooth and continuous. Readjust the fine tuning control for clearest picture and best sound. Insert an attenuator in series with the antenna and the receiver antenna terminals so that signal strength may be varied from weak to strong. If a suitable attenuator is not available stray feed the signal to the set by placing the antenna lead-in near the antenna terminals of the receiver.
Reduce the signal input to the receiver so that the signal falls below the limiting level of the 6BN6 limiter-detector as evidenced by a "hiss" in the sound. Adjust the primary & secondary of the sound take-off transformer A9 & A10, the sound if transformer (A11), the quadrature coil (A12) and the buzz control (R7) for maximum sound and minimum buzz. If hiss disappears during adjustments, increase attenuation until hiss reappears.

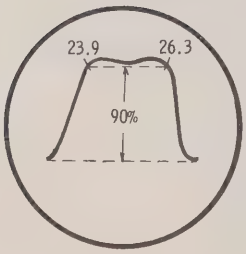


FIG.1

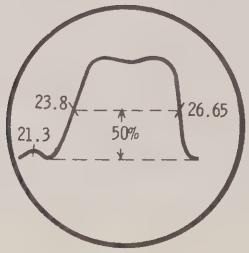


FIG.2

ALIGNMENT INSTRUCTIONS (cont)

OSCILLATOR ALIGNMENT

The channel oscillator adjustment screws are reached through a hole just to the left of the fine tuning shaft. The correct oscillator adjustment screw is accessible through this hole as the channel switch is turned to each channel. Connect the negative lead of a 1.5 volt bias battery to the ungrounded side of C24. Connect the positive lead to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	195MC (10MC Swp)	193.25MC 197.75MC	10	Vert. amp. thru 10K to point Ⓐ. Low side to chassis.	A13	Adjust to place sound marker in trap notch as in Fig. 3. Use high scope gain and increase sweep generator output to view trap region. Video marker should fall at 50% on response curve.
			213MC (10MC Swp)	211.25MC 215.75MC	13		A14	
			207MC (10MC Swp)	205.25MC 209.75MC	12		A15	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A16	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A17	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A18	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A19	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A20	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A21	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A22	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A23	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A24	

RF AND MIXER ALIGNMENT

Leave bias battery connected as under "Oscillator Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	195MC (10MC Swp)	193.25MC 197.75MC	10	Vert. amp. thru 10K to point Ⓑ. Low side to chassis.	A25, A26, A27	Adjust for response curve similar to Fig. 4 with markers above 90%.
10.	"	"	69MC (10MC Swp)	67.25MC 71.75MC	4	"		Check for response curve similar to Fig. 4. If markers fall below 70% on any channel, make SLIGHT compromise adjustments of A25, A26 and A27 with channel switch set to that channel. Recheck all other channels to make sure they have not been seriously affected.
			213MC (10MC Swp)	211.25MC 215.75MC	13			
			207MC (10MC Swp)	205.25MC 209.75MC	12			
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			
11.	"	"	Not Used	105MC	2	USE VTVM DC probe to point Ⓐ. Common to chassis.	A28	Adjust for MINIMUM deflection.

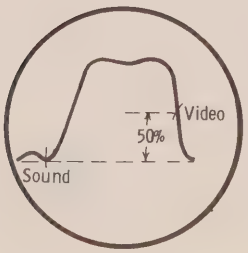


FIG. 3

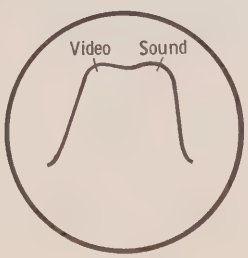
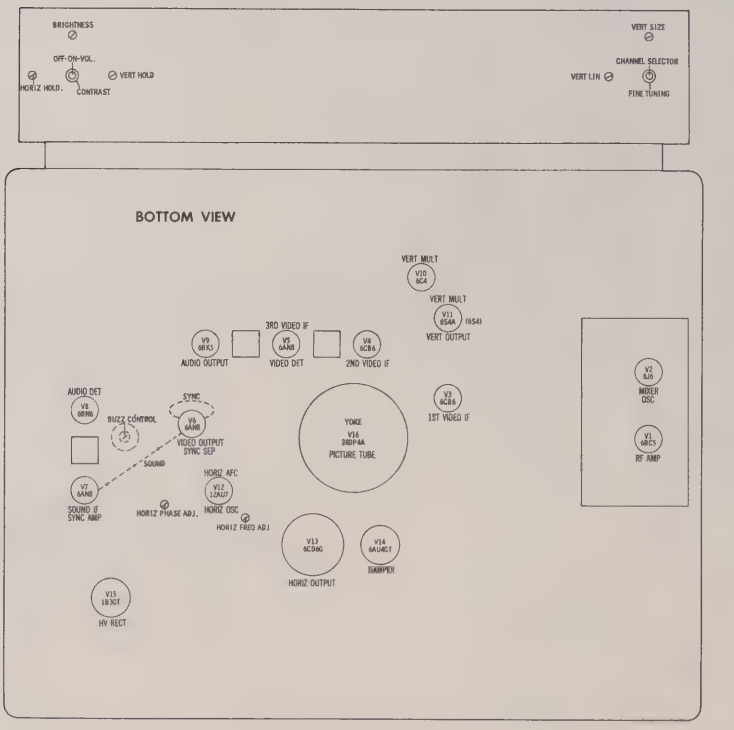


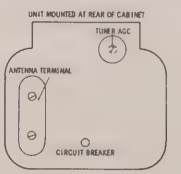
FIG. 4

RESISTANCE MEASUREMENTS

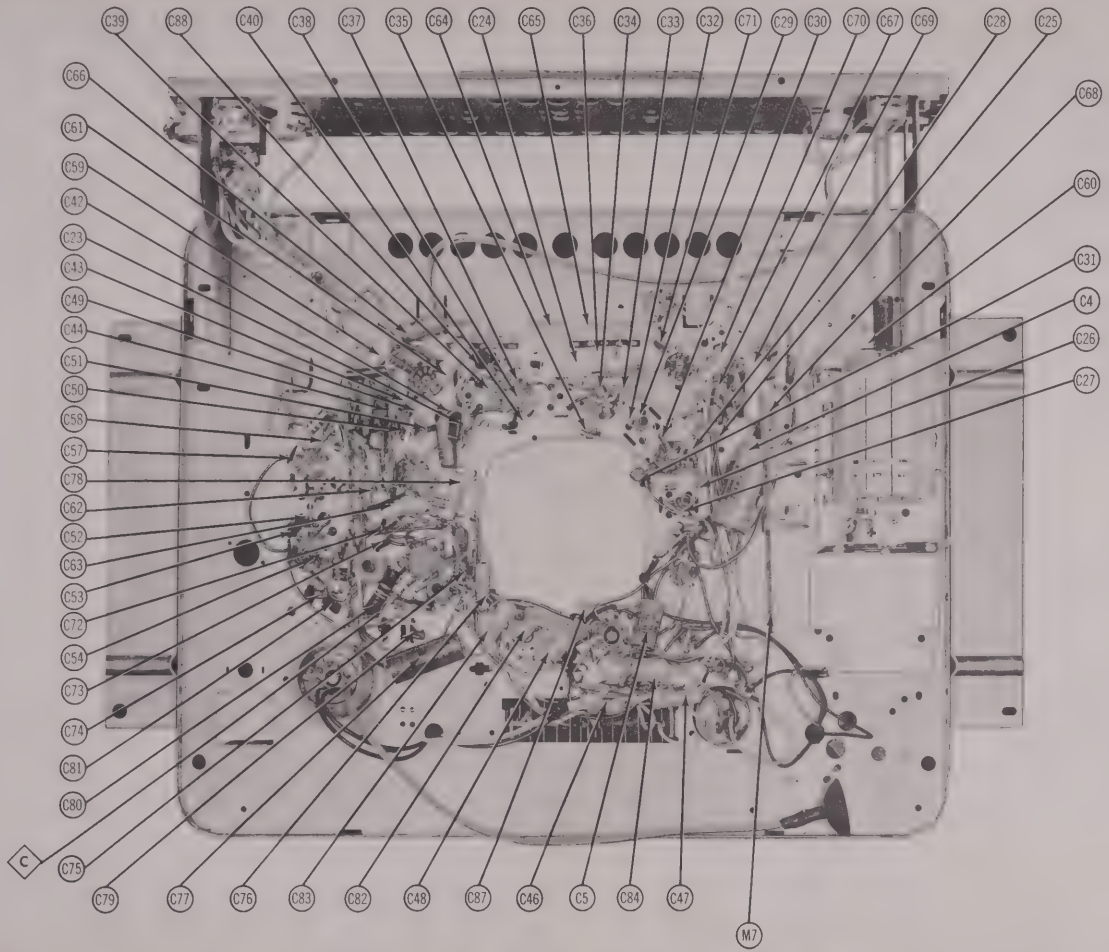
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BC5	2.2Meg	0Ω	0Ω	.1Ω	†2500Ω	†4700Ω	0Ω		
V2	6J6	†13K	†18K	0Ω	.1Ω	220K	10K			
V3	6CB6	1Meg	47Ω	0Ω	.1Ω	†3700Ω	†3700Ω	0Ω		
V4	6CB6	1Meg	62Ω	0Ω	.1Ω	†3700Ω	†3700Ω	0Ω		
V5	6AN8	4700Ω	4700Ω	.2Ω	.1Ω	0Ω	†3500Ω	†3500Ω	2.4Ω	82Ω
V6	6AN8	†100K	2.2Meg	0Ω	0Ω	.1Ω	†5600Ω	†2500Ω	1Meg	● 220Ω
V7	6AN8	†8200Ω	22K	0Ω	0Ω	.1Ω	†33K	†33K	100K	47Ω
V8	6BN6	● 250Ω	.3Ω	0Ω	.1Ω	†18K	4.5Ω	†220K		
V9	6BK5	†385Ω	NC	● 300K	.1Ω	0Ω	150Ω	● 300K	†42Ω	TP
V10	6C4	● *4Meg	NC	.1Ω	0Ω	● *4Meg	100K	● 100K		
V11	6S4A	NC	● 800Ω	2.2Meg	0Ω	.1Ω	2.2Meg	NC	NC	*4000Ω
V12	12AU7	*50K	320K	0Ω	0Ω	0Ω	†80K	1.3Meg	280K	.1Ω
V13	6CD6G	TP	.1Ω	0Ω	TP	470K	TP	0Ω	†5600Ω	TOP CAP *7.5Ω
V14	6AU4GT	TP	NC	75K	NC	†42Ω	TP	0Ω	.1Ω	
V15	1B3GT		PINS	1 - 8	HAVE	INFINITE	RESISTANCE			TOP CAP *270Ω
V16	24DP4A	0Ω	33K	Pin 6 †42Ω	Pin 10 *50K	Pin 11 ● †150K	Pin 12 .1Ω			

† MEASURED FROM OUTPUT OF M2.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
* MEASURED FROM PIN 3 OF V14.
TP TIE POINT
NC NO CONNECTION
ALL MEASUREMENTS TAKEN WITH R8A (TUNER AGC CONTROL) IN MAX. CLOCKWISE DIRECTION.

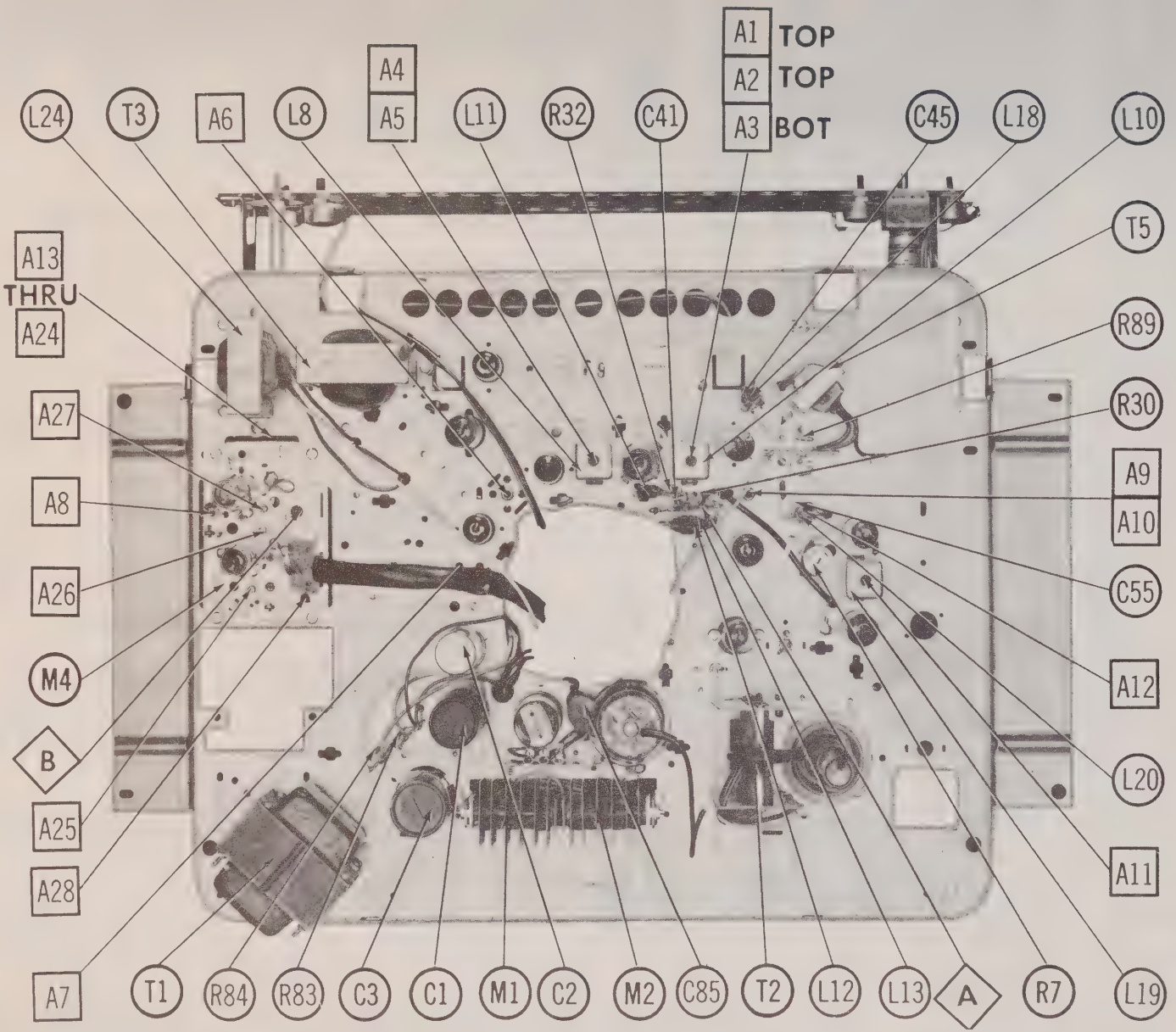




TUBE PLACEMENT CHART



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



CHASSIS TOP VIEW

CORONADO MODELS TV1-9356A, TV1-9357A (Code 2419)

PROPERTY OF
L. F. BLANKENSHIP

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	RF Amp.	6BC5	
V2	Mixer-Osc.	6J6	
V3	1st Video IF Amp.	6CB6	
V4	2nd Video IF Amp.	6CB6	
V5	3rd Video IF Amp.- Video Det.	6AN8	
V6	Video Output-Sync Sep.	6AN8	
V7	Sound IF Amp.-Sync Amp.	6AN8	
V8	Audio Det	6BN6	
V9	Audio Output	6BK5	
V10	Vert. Mult	6C4	
V11	Vert. Mult. -Vert. Output	6S4A	Note 1
V12	Horiz. AFC-Horiz. Osc.	12AU7	
V13	Horiz. Output	6CD8G	
V14	Damper	6AU6GT	
V15	HV Rectifier	1B3GT	

Note 1: 6S4 may be used in some versions.

PICTURE TUBE

ITEM No	REPLACEMENT DATA: CORONADO PART No.	CBS PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	NOTES
V16	24DP4A	24DP4A 1	24DP4A 1	24DP4A 1 24DP4 2	Aluminized Shadow Screen 85

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP	VOLT	REPLACEMENT DATA: CORONADO PART No.	AEROVOX PART No	CORNELL DUBILIER PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	150	150	BC-22464	AFBI21-23	XA004	FP117	TMS-25	T-950
C2	150	150	BC-22463	AFBI21-23	XA004	FP117	TMS-25	T-950
C3A	30	330	BC-23308	PR3-053	BD012	EVP3311		Q-310
B	10	300			BR505			MT-4520
C	50	50						
C4	50	330	BC-23533	PBR350V50	BR505	TC79	TD-50-450	MT-4550
C5	3	300	BC-24274	PBR350V4	BR335	EC-31	TD-3-350	FM-3508

TVA-1753
TVA-1803

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING: CAP	VOLT	REPLACEMENT DATA: CORONADO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C6	1									
C7	6.8		1058-35265	NPO-D16.8	TCZ-6S8	Z013	NPOA-6S8	ST-5568	5TCCB-V68	
C8	6.8		1058-35265	NPO-D16.8	TCZ-6S8	Z013	NPOA-6S8	ST-5568	5TCCB-V68	
C9	10000		1058-35252		TPB-10					
C10	680		1058-35253							
C11	.5-3		1058-35233		S2B-3		315-01-5R5	CT7505A		
C12	1000			BPD-001	DD-102	K069	501-001	DC521	5HK-D1	
C13	680		1058-35233							
C14	60									
C15	.5-3		1058-35233		S2B-3		315-01-5R5	CT7505A		
C16	10		1058-35267							
C17	10		1035-35266							
C18	1000			BPD-001	DD-102	K069	501-001	DC521	5HK-D1	
C19	8.2		1055-35251	NPO-D8.2		Z016	NPOA-6S2			
C20	130		1058-34236	DI-000S2		GO-64	611-1R1	UC-1S2	5GA-T12	
C21	600		1058-35233							
C22	.1	300		PSBN-1	DF-104	CUB3P1		PT401	2TM-P1	
C23	10000			BPD-01	DD-103	K082	611-01	DC5U	5HK-S1	
C24	.25	300		PSBN-25		CUB3P25		PT4732	2TM-P32	
C25	5600			BPD-056	DD-501	K080	611-056	DC5J5	5HK-D5	
C26	8			TCZ-8S2	TCZ-8S2	Z006	NPOA-2S2		5TCCB-V22	
C27	16			TCZ-16	TCZ-16	Z011	NPOK-150		5TCCB-Q15	
C28	1000			BPD-001	DD-102	K069	501-001	DC521	5HK-D1	
C29	5			NPO-S2S	TCZ-6R7	Z011	NPOA-056	ST-555	5TCCB-V47	
C30	3000			BPD-003	DD-303	K073	501-003	DC523	5HK-D3	
C31	1000			BPD-001	DD-102	K069	501-001	DC521	5HK-D1	
C32	47			NPO-D47	TCZ-47	Z033	NPO-338-470	ST-5447	5TCC-Q47	
C33	3000			BPD-003	DD-303	K073	501-003	DC523	5HK-D3	
C34	680			SS680	D6-681	TP50	GP8K-681	UC-5368	5CA-T68	
C35	5600			BPD-056	DD-501	K080	611-056	DC5J5	5HK-D5	
C36	5600			BPD-056	DD-501	K080	611-056	DC525	5HK-D5	
C37	5000			BPD-005	DD-50	K080	611-005	DC525	5HK-D5	
C38	5000			BPD-005	DD-50	K080	611-005	DC525	5HK-D5	
C39	1000			BPD-001	DD-102	K069	501-001	DC521	5HK-D1	
C40	47			NPO-S15	TCZ-47T	Z041	NPOA-056	ST-555	5TCCB-V47	
C41	8			NPO-S15	TCZ-4R7	Z021	NPOA-056	ST-555	5TCCB-V47	
C42	.1	300		PSBN-1	DF-104	CUB3P1		PT401	2TM-P1	
C43	91			NPO-S2S0	TCZ-5L	TZ33	NPO-338-510	ST-545	5TCC-Q5	
C44	.1	400		P4SN-1	DF-104	CUB4P1		PT401	4TM-P1	
C45	1000			NPO-S2S0	TCZ-5E0	TZ0S0	NPO-337-101	MCB3S5	MS-31	
C46	.022	300		BPD-02	DF-303	CUB3S22	617-03	PT4122	2TM-S22	
C47	.022	600		BPD-02	DF-303	CUB6S22	617-03	PT6122	6TM-S22	
C48	.15	300		P3SN-15		CUB3P15		PT415	3TM-P15	
C49	2.5			NPO-S2.5	TCZ-2R5	TZ26	NPOA-3R5	ST-5553	5TCCB-V33	
C50	33			NPO-S33	TCZ-33	TZ18	NPOL-330	ST-5433	5TCC-Q33	
C51	30		143-33722							Note 3
C52	470			1664-00047	D6-471	S3S747	611-4T1		MS-347	
C53	10000			BPD-02	DD-103	K082	611-01	DC5U	5HK-S1	
C54	1000			BPD-001	DD-102	K069	501-001	DC521	5HK-D1	
C55	100			NPO-S1U0	TCZ-10	TZ09	NPOA-100	ST-541	5TCC-Q1	
C56	10000			BPD-01	DD-103	K082	611-01	DC5U	5HK-S1	Note 1
C57	10000			BPD-01	DD-103	K082	611-01	DC5U	5HK-S1	
C58	1000			BPD-001	DD-102	K069	501-001	DC521	5HK-D1	
C59	400			BPD-01	DD-103	CUB4S1	GP3-353-101	PT401	4TM-S1	
C60	5000	1500								
C61	.01	600		BPD-01	DD-103	K082	611-01	DC5U	5HK-S1	
C62A	270									
B	10000		†17A-34282	†PA-S33	†PC-263				†5T-3	
C	68									
C63	.047	200		BPD-05	DF-503	CUB3S47		PT4147	3TM-S47	
C64A	2000									
B	5000		47A-33378	4PA-A10	4PC-200	4J197S41	41405-01		4V-1	
C	5000									
C65	3000			1664-003		LSED2		MCB457	MS-25	
C66	.1	300		PSBN-1	DF-104	CUB3P1		PT401	2TM-P1	
C67	.033	400		BPD-03	DF-403	CUB4S33		PT4133	4TM-S33	
C68	.1	300		P3BN-1	DF-104	CUB3P1		PT401	2TM-P1	
C69	.1	400		P4SN-1	DF-104	CUB4P1		PT401	4TM-P1	
C70	.022	600		BPD-02	DF-303	CUB6S22	617-03	PT6122	6TM-S22	
C71	1000	1500	8G-34691	BVD-15-100	DD30-102	VZD1	1B5KV-102	MCK-210	20GA-D1	
C72	82			1469-00082	D6-820	22R5Q82	831-820		MS-482	
C73	82			1469-00082	D6-820	22R5Q82	831-820		MS-482	
C74	82			1469-00082	D6-820	22R5Q82	831-820		MS-482	
C75	.047	200		BPD-05	DF-503	CUB3S47		PT4147	3TM-S47	
C76	.022	300		BPD-03	DF-303	CUB3S22	617-03	PT4122	3TM-S22	
C77	.47	300		P3BN-47		CUB3P47		PT5047	3TM-P47	

PARTS LIST AND DESCRIPTIONS

CAPACITORS (cont)

ITEM No	RATING: CAP	VOLT	REPLACEMENT DATA: CORONADO PART No	AEROVOX PART No	CENTRALAB PART No	CORNELL-DUBILIER PART No	ERIE PART No	MALLORY PART No	SPRAGUE PART No	NOTES
C78	.047	600		BPD-05	DF-503	CUB6S47		PT4147	6TM-S47	
C79	270			NPO-S1270	D6-271	SBST27	611-2T1		MS-327	
C80	01	600								
C81	1000			1664-001		LRSD1		MCB255	MS-21	
C82	00.	600		BPD-001	D6-102	CUB6D1	GP2L-102	PT621	6TM-D1	
C83	047	600		BPD-05	DF-503	CUB6S47		PT4147	6TM-S47	
C84	1	600		P6BN-1	DF-104	CUB6P1		PT601	6TM-P1	
C85	120	5000	8G-35225							
C86	56	2000			DD30-560		3KV-560	DC30456	30GA-Q56	Note 2
C87	5000			BPD-005	DD-502	K080	811-005	DC525	5HK-D5	Note 1
C88	5000			BPD-005	DD-502	K080	811-005	DC525	5HK-D5	

† Items C82A, C82B, C83C, R47A and R47B are combined in one unit.
+ Items C84A, C84B, C84C, R54A, R54B and R54C are combined in one unit.
Note 1: May be used in some versions.
Note 2: Some versions may use 68MMF unit in this application.
Note 3: C81 is the capacity of the shielded lead.

CONTROLS

ITEM No	RATING: RESIST	WATTS	REPLACEMENT DATA: CORONADO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1000Ω		B10A-33714	F1-4	RTV-486	*QJ-734	UF13L	Contrast (Panel)
B	1Meg			R1-5Z			UR16A	Volume (Rear)
C	Switch			KB-31			UR-38	Attach to R1B
R2A	50K	½	B10B-33694	AB-5I	A47-50K-6	Q11-123	TA54L	Horiz. Hold
B	Shaft		Not Req.	AK-4	RS6-3	Not Req.	Not Req.	Attach to R2A
R3A	500K	½	B10B-33695	AB-5O	A47-500K-6	Q11-133	TA95L	Brightness
B	Shaft		Not Req.	AK-4	RS6-3	Not Req.	Not Req.	Attach to R3A
R4A	150K	½	B10B-33683-1	AB-4J	A47-150K-6	Q11-128	TA194L	Vert. Hold
B	Shaft		Not Req.	AK-4	RS6-3	Not Req.	Not Req.	Attach to R4A
R5A	2500Ω	½	B10B-35606	aAB-7	aA47-2500-B	aQU-U3	aRU-4	Vert. Linearity-180Ω Stop
B	Shaft		Not Req.	AK-1	FS3-4	BQ	Not Req.	Attach to R5A
R6A	3Meg	½	B10B-33695	AB-94	A47-3Meg-6	Q11-140	TA95L	Vert. Size
B	Shaft		Not Req.	AK-1	FS3-4	BQ	Not Req.	Attach to R6A
R7	750Ω	2	A10D-33957		35-750			Bezz (Wire-wound)
R8A	1Meg	½	B10A-33687	B-84-8	A47-1Meg-6	Q11-140	UT9	Tuner AGC
B	Shaft		Not Req.	Not Req.	RS6-3	Not Req.	Not Req.	Attach to R8A
C	Switch		Not Req.	Not Req.	6WS-12	T8-1	UR-36	Attach to R8A

* Concentrist Equivalent: Kit K-5, Base Elements & Shafts; Bit-100 & P17-102 (Panel)
B13-151 & R3-115 (Rear)
T6-1 (Switch)

† Universal Replacement (Mallory exact duplicate part no. UK65S)
+ Connect a 1500 resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control. (Control viewed from shaft end, terminals down.)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No	RATING: OHMS	WATT	REPLACEMENT DATA: CORONADO PART No.	IRC PART No.	NOTES
R9	680K			BTS-68OK	
R10	4700Ω			BTS-4700	
R11	2200Ω			BTS-2200	
R12	220K			BTS-220K	
R13	10K			BTS-10K	
R14	10K			BTS-10K	
R15	33K			BTS-33K	
R16	15K			BTS-15K	
R17	2.2Meg			BTS-2.2Meg	
R18	220K			BTS-220K	
R19	1000Ω			BTS-1000	
R20	5600Ω			BTS-5600	
R21	1000Ω			BTS-1000	
R22	47Ω			BTS-47	
R23	1000Ω			BTS-1000	
R24	18K			BTS-18K	
R25	1000Ω			BTS-1000	
R26	630 5%		9B1-150	BTS-63 5%	
R27	33K			BTS-33K	
R28	1000Ω			BTS-1000	
R29	82			BTS-82	
R30	1Meg			BTS-1Meg	
R31	2700Ω	3	9C11-1104		
R32	4700Ω			BTS-4700	
R33	47Ω			BTS-47	
R34	1Meg			BTS-1Meg	
R35	5600Ω	2		BTS-5600	
R36	100K			BTS-100K	
R37	33K			BTS-33K	
R38	100K			BTS-100K	Note 1
R39	33K	1		BTA-33K	
R40	47Ω			BTS-47	
R41	680Ω			BTS-680	
R42	220K	2		BTS-220K	
R43	18K			BTS-18K	Note 2
R44	22K			BTS-22K	
R45	150Ω	1		BTS-150	
R46	10K			BTS-10K	
R47A	220K		†17A-24212	† BTS-220K	
B	2.2Meg			BTS-2.2Meg	
R49	100K			BTS-100K	
R49	560K			BTS-560K	
R50	22K			BTS-22K	

ITEM No	RATING: OHMS	WATT	REPLACEMENT DATA: CORONADO PART No.	IRC PART No.	NOTES
R51	1Meg			BTS-1Meg	
R52	4700Ω	1		BTA-4700	
R53	1000Ω			BTS-1000	
R54A	330Ω			BTS-33X	
B	6300Ω		47A-33378	BTS-6300	
C	6300Ω			BTS-6300	
R55	470Ω			BTS-470	
R56	75K 5%			BTS-75K 5%	
R57	2.2Meg			BTS-2.2Meg	
R58	220K			BTS-220K	
R59	3.3Meg			BTS-3.3Meg	
R60	100K			BTS-100K	
R61	100K			BTS-100K	
R62	3300Ω	5	9C13-1105	PWT-3300	Note 3
R63	560Ω				
R64	560Ω				
R65	330K			BTS-330K	
R66	330K			BTS-330K	
R67	330K			BTS-330K	
R68	68K			BTS-68K	
R69	3900Ω			BTS-3900	
R70	100K				
R71	39K				
R72	18K			BTS-18K	
R73	68K			BTS-68K	
R74	82K			BTS-82K	
R75	10Meg				
R76	33K			BTS-33K	
R77	18K			BTS-18K	Note 4
R78	33K			BTS-33K	
R79	62K	1		BTA-62K	
R80	100Ω			BTS-100	
R81	470K			BTS-470K	
R82	9600Ω	6	9C13-1108		
R83	82K			BTS-82K	
R84	82K			BTS-82K	
R85	4.7Ω		9C1-107I	BWS-4.7	
R86	2800Ω	5	9C-34033	PWT-3500	
R87	4.7Ω	10	9C-30686		
R88	330K			BTS-330K	
R89	470K			BTS-470K	
R90	680K			BTS-68OK	Note 1

† Items R47A, R47B, C62A, C62B and C62C are combined in one unit.
+ Items R54A, R54B, R54C, C54A, C54B and C54C are combined in one unit.
Note 1: Some versions use a 470K resistor in this application.
Note 2: Not used in some versions.
Note 3: Some versions use a 4700Ω 5W resistor to this application. (Part 49C13-1107)
Note 4: Some versions use a 4700Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA: CORONADO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC	12.6VCT			12D-23583				21F34 ①	F-42A ①
	② 6A	② 6.5A								

① Parallel & phase 12.6V, 3.5A windings.
② Connect in series & phase 6.3V, 3A windings.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA: CORONADO PART No	Halldorson PART No	Merit PART No	RCA TYPE No	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	Horiz. Output Trans	12L-23423	FB4S0*	MVO-5S*		X12S* ⑤	A-8298*	21LY-80*	T-93*
T3	Vert. Output Trans	12L-10648-2	21W00 ①	A-3038 ①	2227 ①	Y30S ①	A-8143 ①	28S53 ①	A-99X ①
T4A	Yoke(90°) Horiz. (19MC)	201-25360 ⑥	DF60T ⑧	MDF-62 ⑧	1600 ⑧	Y00V19 ⑧	DY-16A ⑧	DY-16 ⑧	T-41-1 ⑧
B	Vert. (40MC)	19M 23770 ⑨							
		200-25320 ⑨							
		201-25495 ⑨							

① Connect as auto trans.
② Use 10 to 1 turns ratio.
③ Drill new mounting hole(s).
④ Includes capacitor C98; resistors R83 and R84.
⑤ Yoke rear cover & centering device.
⑥ Ground lead assembly.
⑦ Complete deflection yoke & mounting assembly. Includes the three above listed items.
⑧ Use original rear cover and centering device.
⑨ Loosen and rotate core clamp to duplicate original shield mounting.
⑩ Connect horiz. damping network across terms #3 and #1. Use original if necessary.
⑪ Use original horiz. yoke damping network if necessary.
This part may be superceded by Parts Manufacturer's introduction of special unit for this application.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
8	8	8	8	8	8	8	8
3	3	6	6	6	3	6	3
1	1	3	2	1	1	3	6

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE: PRI	SEC	REPLACEMENT DATA: CORONADO PART No	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	6.4K	3-4Ω	12C-23704	21113	A-3026	A-3878	24S50	S-7X	

SPEAKER

ITEM No	RATINGS: SIZE	FIELD	V C. IMP	REPLACEMENT DATA: CORONADO PART No	OUAM PART No	RCA TYPE No	NOTES
8P51	8"	PM	3-4Ω	18A-25935	8A07	20S52	

COILS (RF-IF)

ITEM No.	USE	CORONADO PART No.	NOTES
L1	Ant. Matching Trans.	1052-25238	
L2	RF Trap Coil	1052-25241	
L3A	Ant., RF, Mixer Grid, Osc. Coils	1056-35250-3	Channel 2
B	Ant., RF, Mixer Grid, Osc. Coils	1056-35250-3	Channel 3
C	Ant., RF, Mixer Grid, Osc. Coils	1056-35250-3	Channel 4
D	Ant., RF, Mixer Grid, Osc. Coils	1056-35250-5	Channel 5
E	Ant., RF, Mixer Grid, Osc. Coils	1056-35250-5	Channel 6
F	Ant., RF, Mixer Grid, Osc. Coils	1056-35250-7	Channel 7
L3G	Ant., RF, Mixer Grid, Osc. Coils	1056-35250-8	Channel 8
H	Ant., RF, Mixer Grid, Osc. Coils	1056-35250-9	Channel 9
I	Ant., RF, Mixer Grid, Osc. Coils	1056-35250-10	Channel 10
J	Ant., RF, Mixer Grid, Osc. Coils	1056-35250-11	Channel 11
K	Ant., RF, Mixer Grid, Osc. Coils	1056-35250-12	Channel 12
L	Ant., RF, Mixer Grid, Osc. Coils	1056-35250-13	Channel 13
L4	RF Choke	1056-35237	

ITEM No.	USE	DC RES.: PRI.	SEC.	REPLACEMENT DATA: CORONADO PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L5	1st Video IF	.9Ω		13M-25686				
L6	2& 3SMC trap	.1Ω		13M-25689				
L7	2nd Video IF	.1Ω		201-25829				
L8	3rd Video IF	.1Ω		201-24043				
L9	RF Choke	3.6Ω	.3Ω	201-30265	19-5036	TV-180	6178	36 Microhenries
L10	4th Video IF	.2Ω	.3Ω	13M-25687				
L11	Series Peaking Coil	3.1Ω		16A-32933	19-6023		6183	33 Microhenries
L12	Series Peaking Coil	3.1Ω		16A-32933	19-6023		6183	33 Microhenries
L13	Shunt Peaking Coil	26Ω		18A-19365	19-6400		6136	430 Microhenries
L14A	4. SMC Trap	1.7Ω		201-32729				
B	1st Sound IF	2.8Ω						
L15	Series Peaking Coil	7.8Ω		16A-31291	19-5300		6185	305 Microhenries
L16	Shunt Peaking Coil	7.8Ω		16A-30970	19-5350	TV-185	6190	270 Microhenries
L17	Series Peaking Coil	2.6Ω		16A-24090	19-1005		6813	11 Microhenries
L18	4. SMC Trap	1Ω		16A-25441				
L19	2nd Sound IF	.9Ω	.8Ω	201-32673				
L20	Quadrature Coil	4.5Ω		201-32727	20-1005		1480	8 Microhenries
L21	RF Choke	1.5Ω		16A-21701	19-1005		4812	

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.: PRI.	SEC	REPLACEMENT DATA: CORONADO PART No.	MEISSNER PART No.	MERIT PART No	MILLER PART No	RCA TYPE No	Ram PART No	Thordarson PART No	NOTES
L22	80Ω		13E-24440			6212				
L23	35Ω		13M-24441			6314				Tap ③ 57Ω

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	CORONADO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L24	. 340A	42Ω	1. 5HY	16B25146	C5037①	C-2996①	C-2326 ①	26C44 ①	C-17X ①

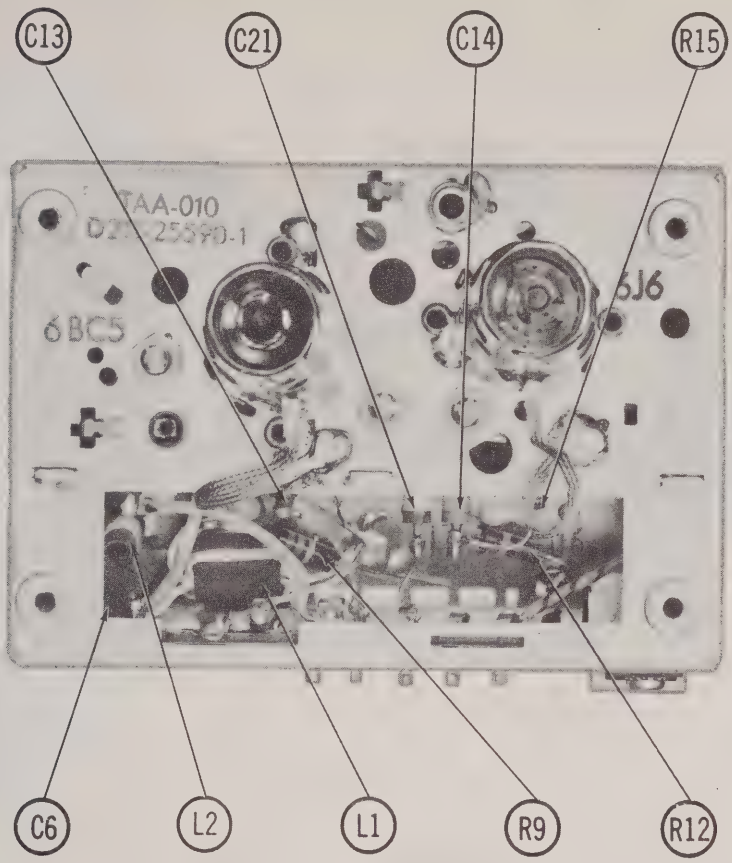
① Drill one new mounting hole.

SELENIUM RECTIFIER

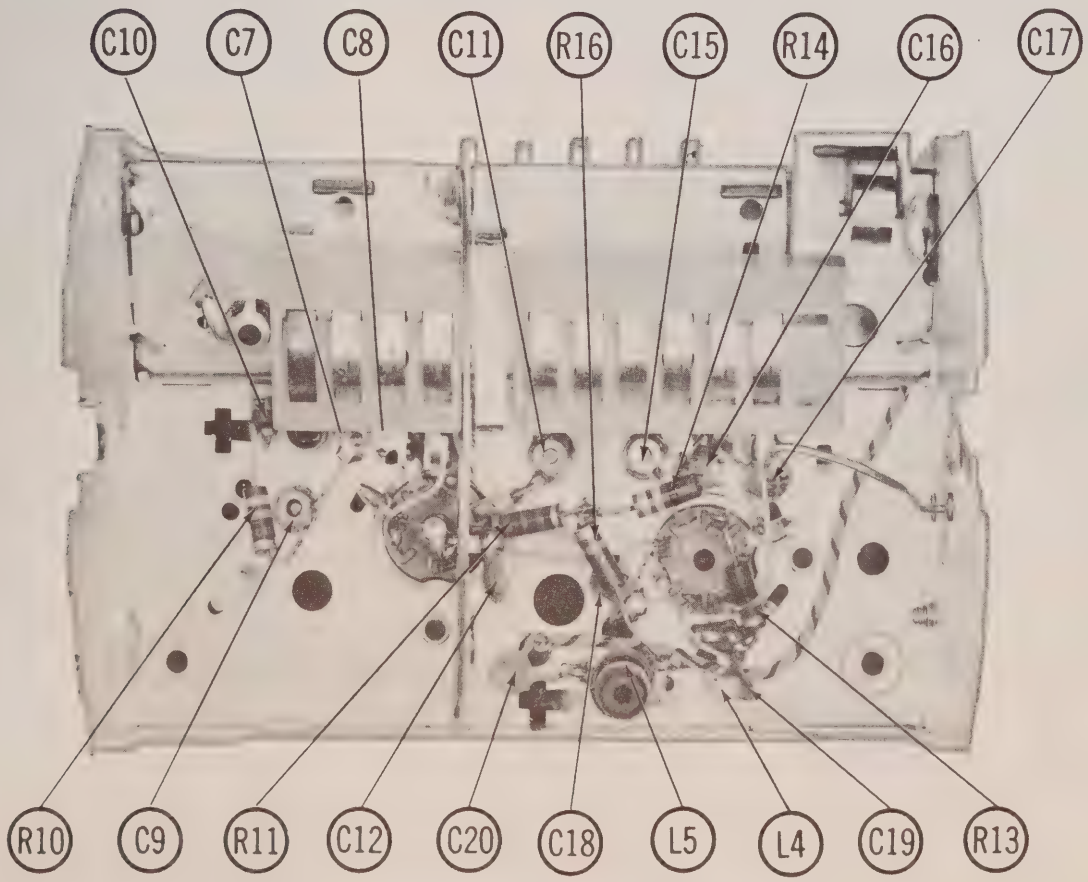
ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	CORONADO PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	. 340A	21J25315	1241A	MR350	6S350	6QA2	350A	
M2	. 340A	21J25315	1241A	MR350	6S350	6QA2	350A	

MISCELLANEOUS

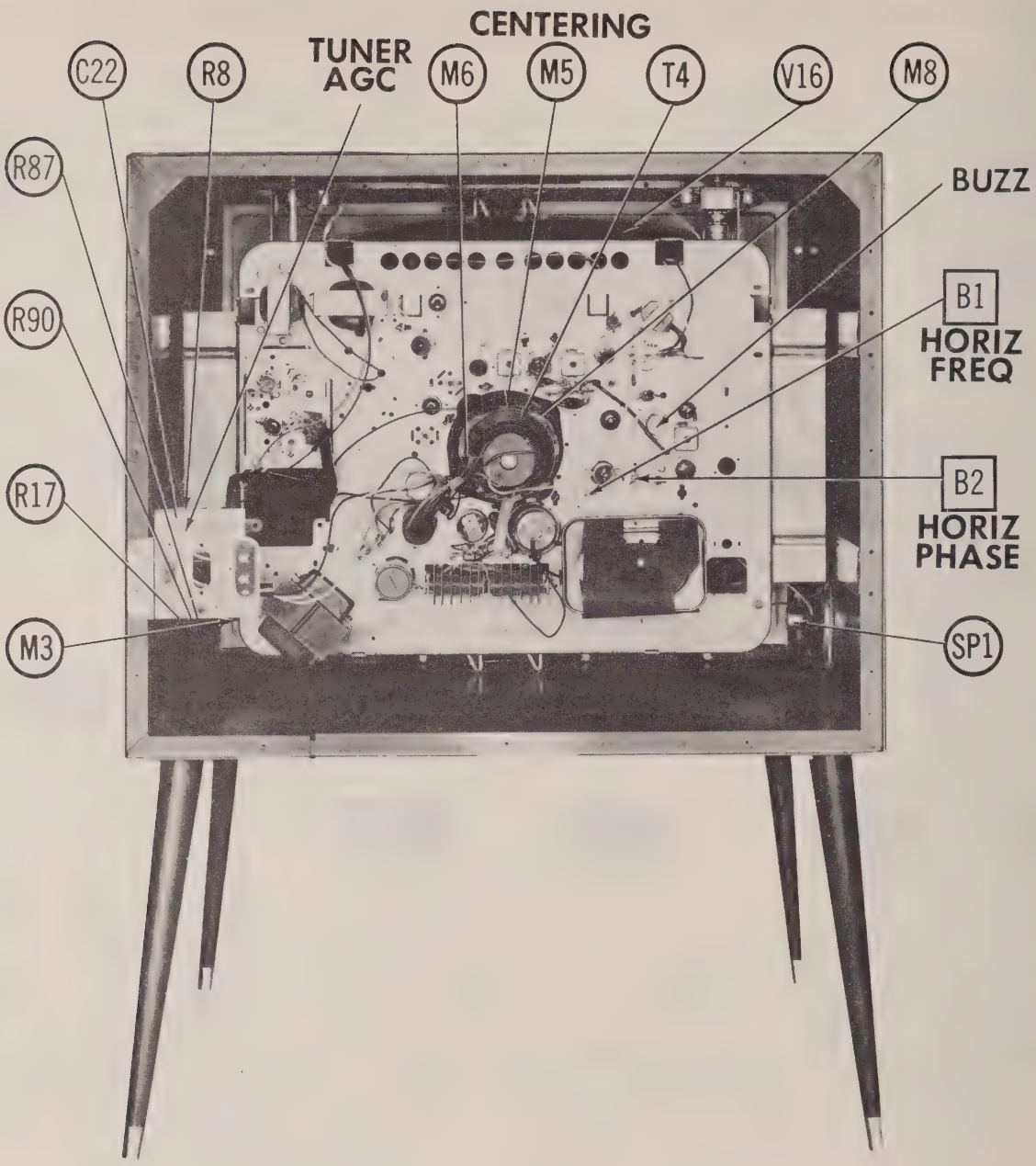
ITEM No.	PART NAME	CORONADO PART No.	NOTES
M3	Circuit Breaker	20F-25568	Low Voltage Protection
M4	Tuner	21l-25590-1	VHF
M5	Centering Device	16M-23770	Includes Deflection Yoke (T4),Rear Cover.
M6	Ion Trap	16M-19705	
M7	Correction Magnet	16M-22873	
M8	Width Control	2C-25229	
	Cabinet	200-25586	Model TV1-9356A
	Cabinet	200-25586-1	Model TV1-9357A
	Knob	5B-23789-A29	Fine Tuning
	Knob	5B-23788-A29	Channel Selector
	Knob	5B-23787-A29	Contrast
	Knob	5B-23786-A29	On-Off-Volume
	Knob	5B-23805-A29	Control (3 Used)
	Disk	5M-25056-A29	Channel Indicator - Model TV1-9356A
	Disk	5M-25160-A29	Channel Indicator - Model TV1-9357A
	Disk	5M-25055-A29	Control Indicator - Model TV1-9356A
	Disk	5M-25161-A29	Control Indicator - Model TV1-9357A
	Mask	25M-26518-A183	
	Safety Glass	30M-26515	



RF TUNER-TOP VIEW



RF TUNER-BOTTOM VIEW



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Turn the horizontal hold control to its mid-range position. Connect a short clip lead across L23. Adjust horizontal frequency slug (B1) until the picture synchronizes horizontally. Remove the clip lead from L23. Connect the vertical amplifier thru a low capacity probe to point Ⓒ. Low side to chassis. Adjust the horizontal phase coil (B2) until a waveform similar to Fig. 5 is obtained. While making this adjustment, keep the picture in sync with the horizontal hold control.

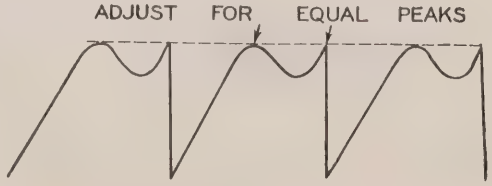


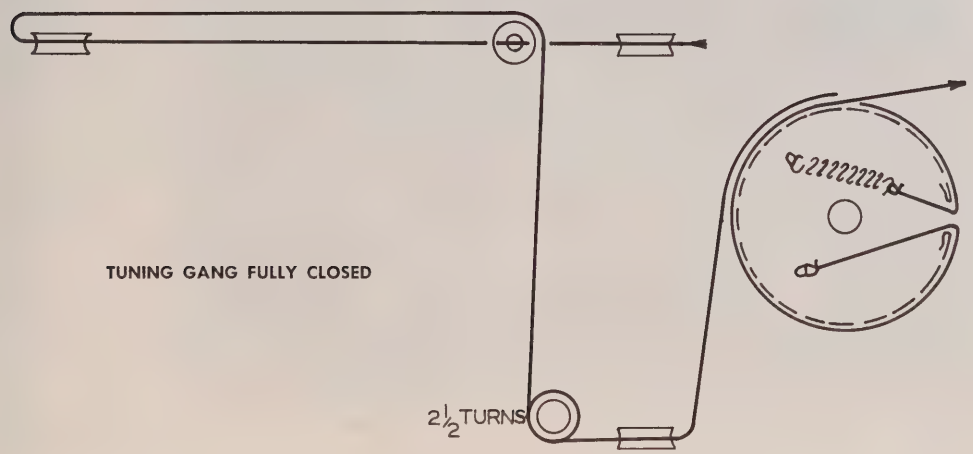
FIG. 5

RETMA MEMBER

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

DAVID BOGEN
MODEL RR501B

TRADE NAME	David Bogen Model RR501B		
MANUFACTURER	David Bogen Co., Inc., 29 Ninth Ave., New York 14, N. Y.		
TYPE SET	AC Operated FM-AM Superheterodyne Receiver		
TUBES	Eleven		
POWER SUPPLY	105-125 Volts AC - 60 Cycles	RATING	.82 Amp. @ 117 Volts AC
TUNING RANGE - BROADCAST	530KC - 1650KC	FM	88MC - 108MC



DIAL CORD STRINGING

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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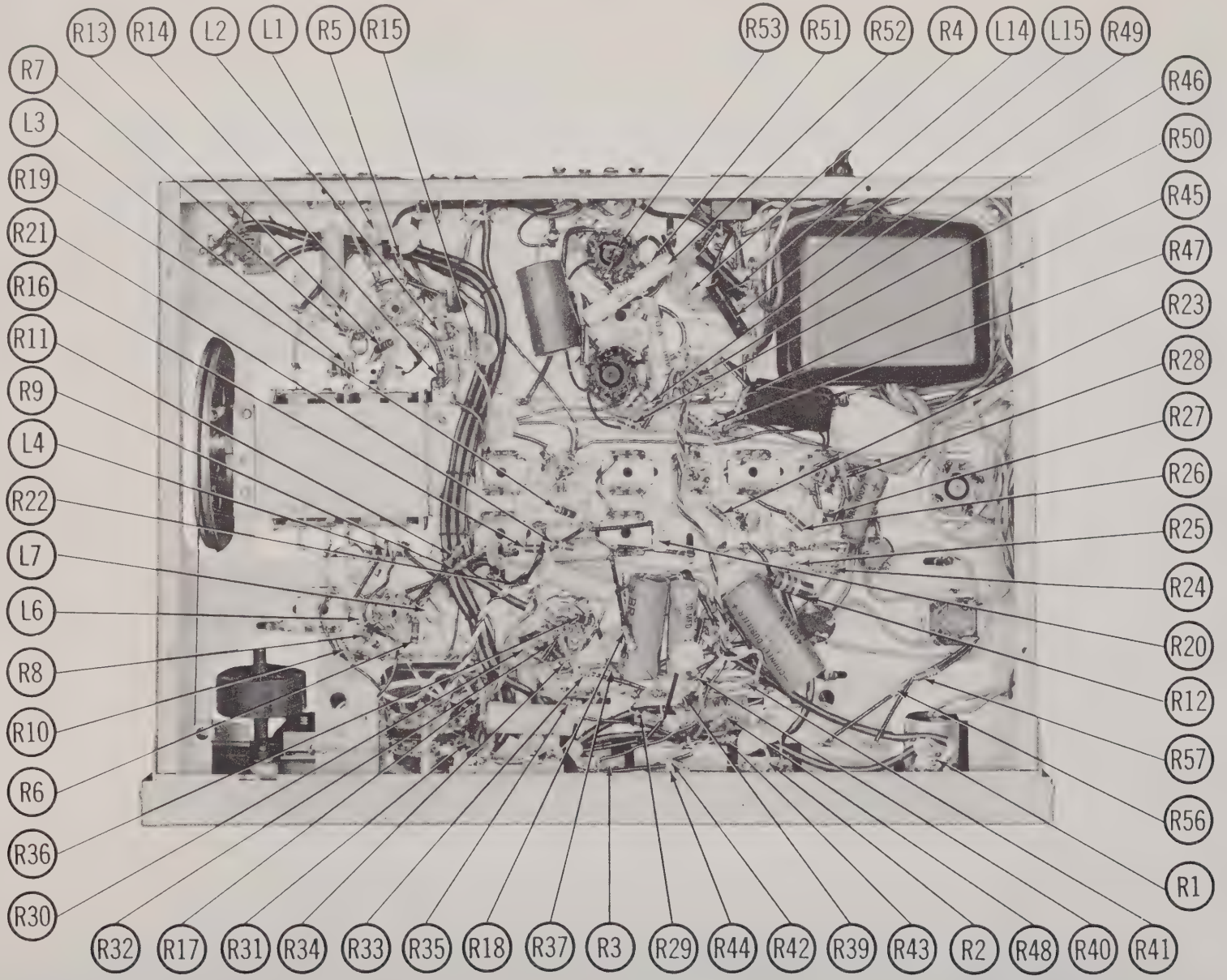
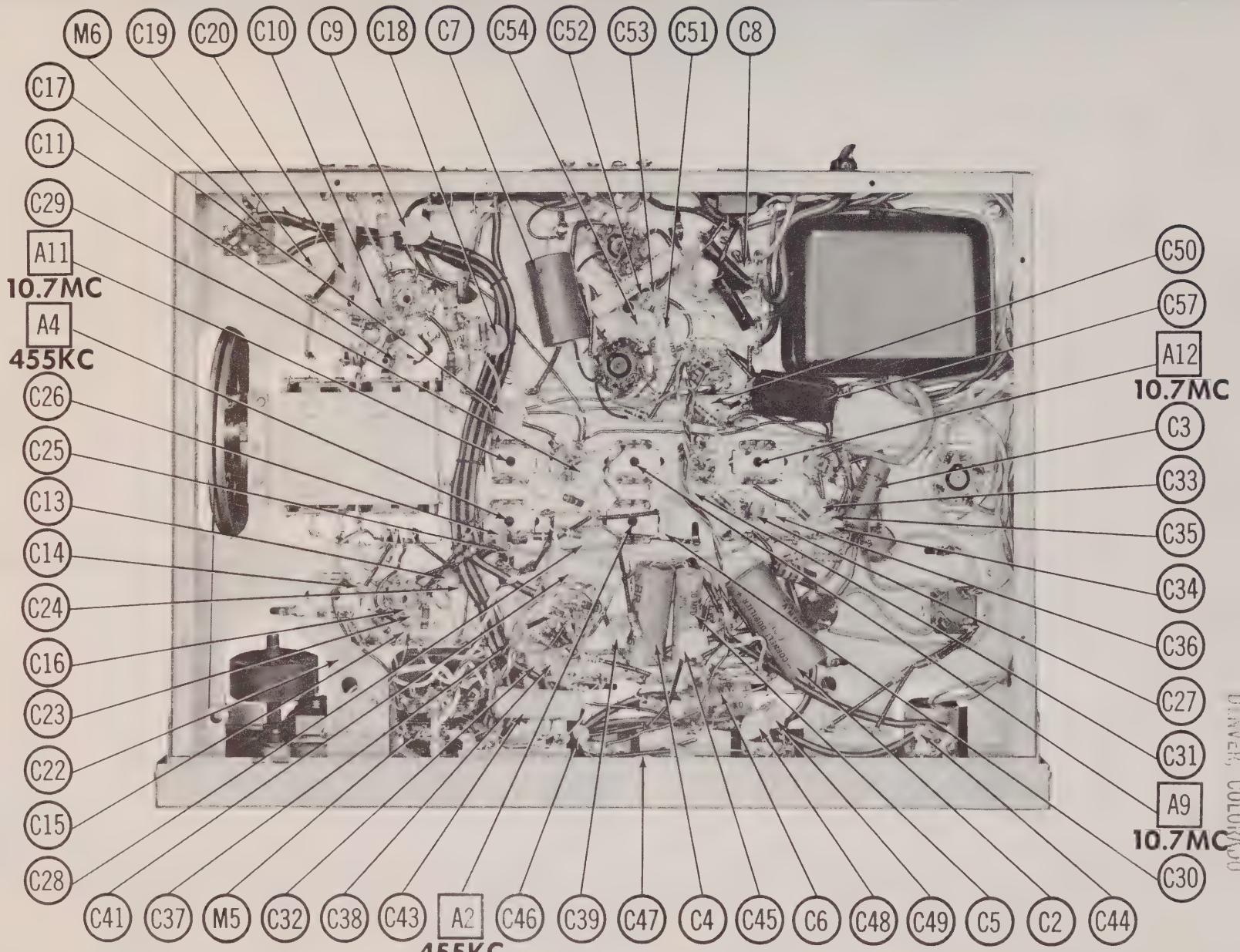


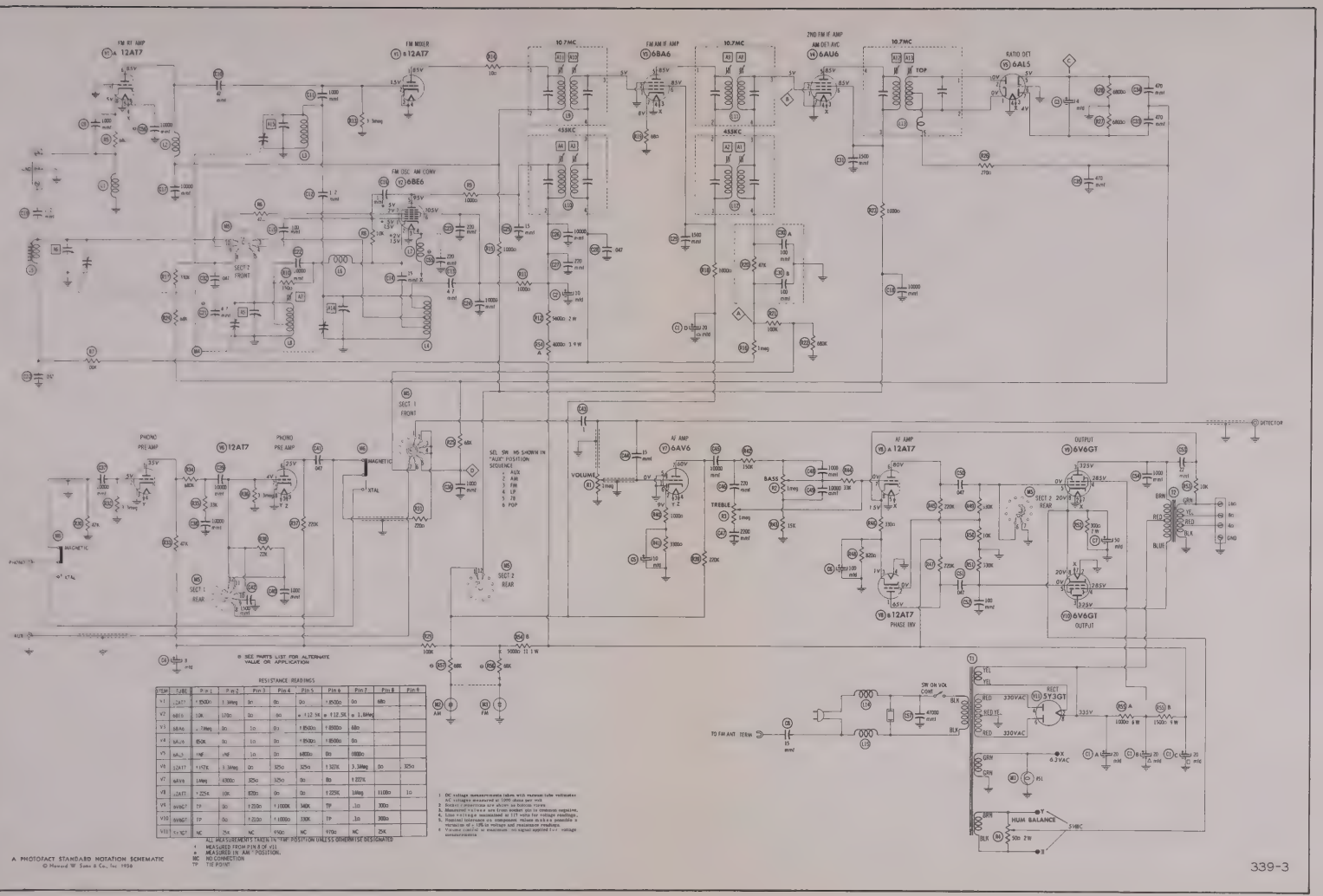
CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PROPERTY OF
DENVER, COLORADO

DAVID BOGEN
MODEL RR50IB



RESISTANCE READINGS

TUBE	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AT7	1 ΜΩ	1.1MEG	0Ω	0Ω	0Ω	1 ΜΩ	0Ω	68Ω	
V2	6BE6	33K	170Ω	0Ω	0Ω	∞	12.5K	∞	1.6MEG	
V3	6BA6	1.7MEG	0Ω	1Ω	0Ω	1 ΜΩ	1 ΜΩ	68Ω		
V4	6AU6	450K	0Ω	1Ω	0Ω	1 ΜΩ	1 ΜΩ	0Ω		
V5	6AL5	1 ΜΩ	1 ΜΩ	1Ω	0Ω	68ΚΩ	0Ω	68ΚΩ		
V8	12AT7	1 ΜΩ	1.1MEG	0Ω	325Ω	325Ω	1 ΜΩ	3.1MEG	0Ω	325Ω
V7	6AV6	1MEG	430ΚΩ	325Ω	325Ω	0Ω	0Ω	1 ΜΩ		
V8	12AT7	1 ΜΩ	105K	82ΚΩ	0Ω	0Ω	1 ΜΩ	1MEG	110ΚΩ	1Ω
V9	6V6GT	TP	0Ω	1 25Ω	1 1000K	340K	TP	1Ω	300Ω	
V10	6V6GT	TP	0Ω	1 25Ω	1 1000K	330K	TP	1Ω	300Ω	
V11	5Y3GT	NC	75K	NC	NC	970Ω	NC	970Ω	NC	75K

ALL MEASUREMENTS TAKEN IN "TP" POSITION UNLESS OTHERWISE DESIGNATED
* MEASURED FROM PIN 8 OF V11
# MEASURED IN AM "POSITION."
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter. AC voltages measured at 1000 cycles per volt.
2. Resistor measurements are shown as bottom views.
3. Measured voltages are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Potential tolerance on components, values as close as possible to values of ± 10% in voltage and resistance readings.
6. Voltmeter, or equivalent, on ranges applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	455KC (400∿ Mod)	AM	Tuning gang fully open.	DC probe thru 100K to point (A). Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	Direct	Across AM antenna terminals.	1500KC	"	1500KC	"	A5, A6	"
3.	"	"	600KC	"	600KC	"	A7	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to pin 2 (grid) of 12AT7 (V1). Low side to chassis.	10.7MC (unmod)	FM	Point of non-interference.	DC probe thru 220K to point (B). Common to chassis.	A8, A9, A10, A11	Adjust for maximum deflection.
5.	"	"	"	"	"	DC probe thru 220K to point (C). Common to chassis.	A12	"
6.	"	"	"	"	"	DC probe thru 220K to point (D). Common to chassis.	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD	High side to pin 2 (grid) of 12AT7 (V1). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference.	Vert. amp. thru 220K to point (B). Low side to chassis.	A8, A9, A10, A11	Disconnect stabilizing capacitor C3. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
5.	"	"	"	"	"	Vert. amp. thru 220K to point (C). Low side to chassis.	A12	"
6.	"	"	"	"	"	Vert. amp. thru 220K to point (D). Low side to chassis.	A13	Reconnect stabilizing capacitor C3. Adjust so that 10.7MC occurs at center of cross-over lines similar to Fig. 2. SLIGHTLY retouch A12 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	300Ω carbon resistor	High side thru 300Ω to FM antenna terminal. Low side to chassis.	106MC	FM	106MC	DC probe thru 220K to point (B). Common to chassis.	A14, A15	Adjust for maximum deflection.
8.	"	"	90MC	"	90MC	"		Check for tracking. If necessary, repeat step 7.

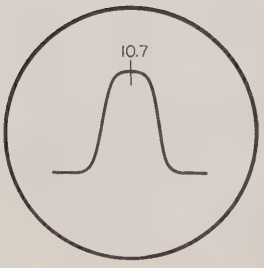


FIG. 1

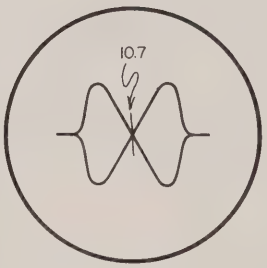


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	FM RF Amp.-FM Mixer	12AT7	
V2	FM Osc.-AM Converter	6BE6	
V3	1st. IF Amplifier	6BA6	
V4	2nd. FM IF Amp.-AM Det.-AVC	6AU6	
V5	Ratio Detector	6AL5	

ITEM No.	USE	TYPE	NOTES
V6	Preamplifier	12AT7	
V7	AF Amplifier	6AV6	
V8	AF Amp.-Phase Inverter	12AT7	
V9	Output	6V6GT	
V10	Output	6V6GT	
V11	Rectifier	5Y3GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA David Bogen PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	20	350		AFH4-14	CO27	FP376.5	TMQ-12	T-140	R2277 *
B	▲20	350			BR2035	TC65		FM-4520	
C	■20	350							
D	●20	350							
C2	10	450		PRS450V10	BR1045	TC72	TD-10-450	FM-4510	TVA-1705
C3	4	15		SRE25V5	BBR4-50	TC30	TD-4-25	MMT-0505	TVA-1203
C4	8	250		PRS250V8	BR825	TC51	TD-8-250	FM-2508	TVA-1503
C5	10	25		PRS25V10	BR102	TC22	TD-10-25	FM-0210	TVA-1204
C6	100	6		PRS6V100	BBR100-6T	TC2501	TD-100-6	MTH-0610	TVA-1101
C7	50	50		PRS50V50	BR505	TC39	TD-50-50	FM-0550	TVA-1308

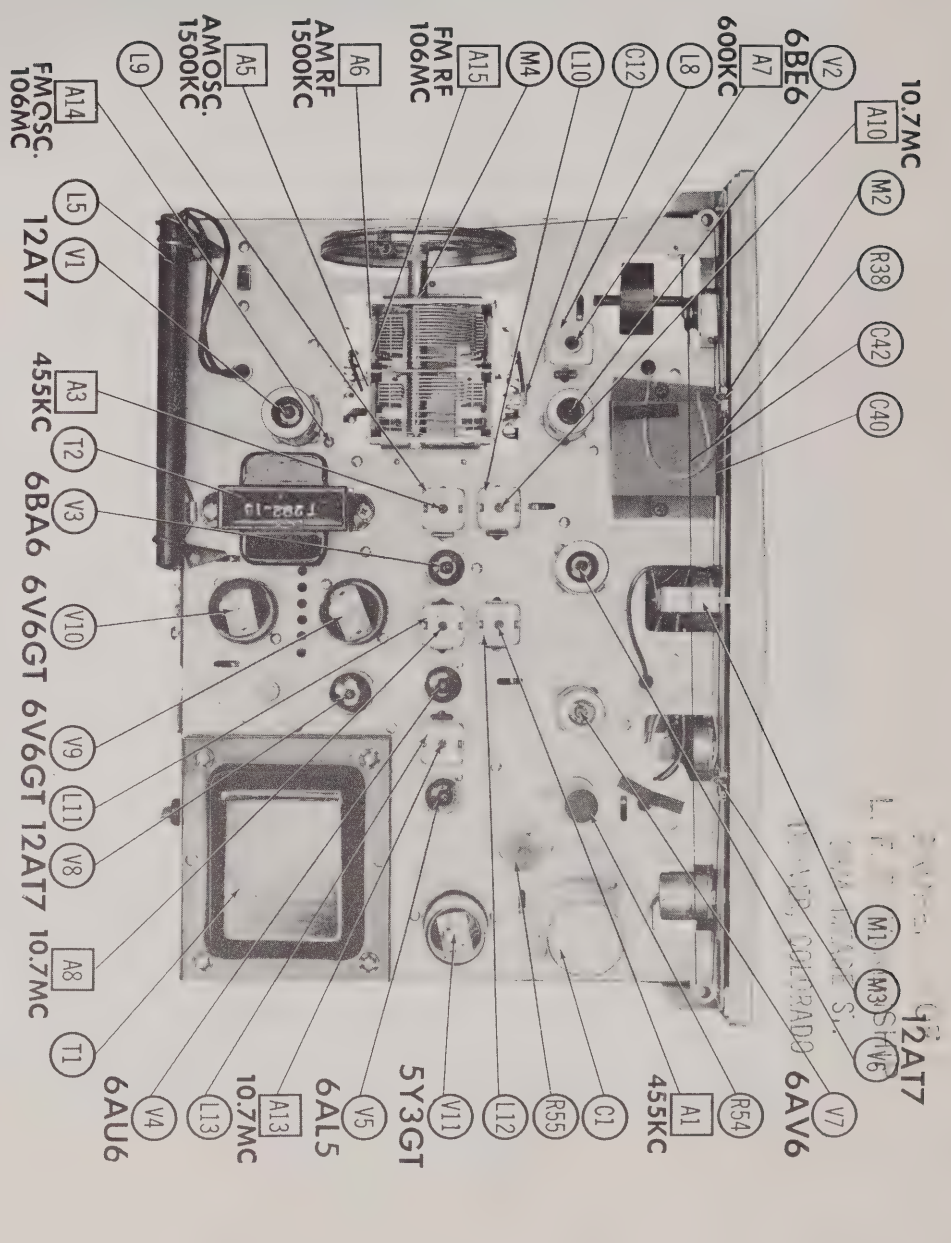
* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA David Bogen PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C8	15				TCA-15		N330K-150			
C9	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C10	47			BPD-000047	DD-470	G033	831-470	UC-5447	5GA-Q47	
C11	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C12	1.2									
C13	4.7									
C14	15				TCA-15		N330K-150			
C15	100			NP0-D1100	TCZ-100	TZ30	NP0-337-101	ZT-531	5TCC-T1	
C16	1			NP0-S11	TCZ-1	TZ03	NP0A-010		5TCCB-V1	
C17	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C18	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C19	1.2									
C20	.047	200		BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C21	4.7									Note 1
C22	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C23	220			DI-00022	DD-221	G051	811-221	UC-5322	5GA-T22	
C24	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C25	15				TCA-15		N330K-150			
C26	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C27	220			DI-00022	DD-221	G051	811-221	UC-5322	5GA-T22	
C28	.047	200		BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C29	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C30A	100			†PA-97-1	†PC-50	†111TM1	†1403-01	UC-531	†D-1	
B	100							UC-531		
C31	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C32	.047	200		BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C33	470			BPD-00047	DD-471	K060	811-471	UC-5347	5GA-T47	
C34	470			BPD-00047	DD-471	K060	811-471	UC-5347	5GA-T47	
C35	470			BPD-00047	DD-471	K060	811-471	UC-5347	5GA-T47	
C36	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C37	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C38	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C39	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C40	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C41	.047	200		BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C42	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C43	.1	200		[illegible]38N-1	DF-104	CUB2P1		PT401	2TM-P1	
C44	15			B[illegible]D-000015	DD-150	G021	831-150	UC-5415	5GA-Q15	
C45	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C46	220			DI-00022	DD-221	G051	811-221	UC-5322	5GA-T22	
C47	2200			BPD-0022	D6-222	K073	811-0022	UC-5222	5HK-D22	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA David Bogen PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C48	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C49	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C50	.047	400		BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C51	.047	400		BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C52	100			BPD-0001	DD-101	G042	801-101	UC-531	5GA-T1	
C53	22			BPD-000022	D6-220	G024	831-220	UC-5422	5GA-Q22	
C54	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C55	220			DI-00022	DD-221	G051	811-221	UC-5322	5GA-T22	Note 1
C56	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	Note 1
C57	47000	600		BPD-05	DF-503	CUB6S47		PT4147	4TM-S47	

† Items C30A, C30B and R20 are combined in one unit.
Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA David Bogen PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	V383A	AB-70	A47-1Meg-Z	Q13-137	U53	Volume
B	Shaft		Not Req.	AK-3	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	KB-1	SWE-12	76-1	US-26	Attach to R1A
D	Cover		Not Req.	KB-5				Attach to R1C
R2A	1Meg	½	V381	AB-70	A47-1Meg-Z	Q13-137	U53	Bass
B	Shaft		Not Req.	AK-3	FS-3	Not Req.	Not Req.	Attach to R2A
R3A	1Meg	½	V381	AB-70	A47-1Meg-Z	Q13-137	U53	Treble
B	Shaft		Not Req.	AK-3	FS-3	Not Req.	Not Req.	Attach to R3A
R4A	50Ω	2	V113	VK-116	A43-50	WPK50	C50P	Hum Adjustment (Wire-wound)
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R4A

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA David Bogen PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R5	68Ω			BTS-68	
R6	47Ω			BTS-47	
R7	100K			BTS-100K	
R8	10K			BTS-10K	
R9	1000Ω			BTS-1000	
R10	150Ω			BTS-150	
R11	1000Ω			BTS-1000	
R12	5600Ω	2		BTB-5600	
R13	3.3Meg			BTS-3.3Meg	
R14	10Ω			BTS-10	
R15	1000Ω			BTS-1000	
R16	1Meg			BTS-1Meg	
R17	330K			BTS-330K	
R18	1000Ω			BTS-1000	
R19	68Ω			BTS-68	
R20	47K		†	BTS-47K	
R21	100K			BTS-100K	
R22	680K			BTS-680K	
R23	1000Ω			BTS-1000	
R24	68K			BTS-68K	
R25	68K			BTS-68K	
R26	270Ω			BTS-270	
R27	6800Ω			BTS-6800	
R28	6800Ω			BTS-6800	
R29	100K			BTS-100K	
R30	47K			BTS-47K	
R31	220Ω			BTS-220	
R32	3.3Meg			BTS-3.3Meg	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA David Bogen PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R33	47K			BTS-47K	
R34	680K			BTS-680K	
R35	33K			BTS-33K	
R36	3.3Meg			BTS-3.3Meg	
R37	220K			BTS-220K	
R38	22K			BTS-22K	
R39	220K			BTS-220K	
R40	1000Ω			BTS-1000	
R41	3300Ω			BTS-3300	
R42	150K			BTS-150K	
R43	15K			BTS-15K	
R44	33K			BTS-33K	
R45	220K			BTS-220K	
R46	330Ω			BTS-330	
R47	220K			BTS-220K	
R48	820Ω			BTS-820	
R49	330K			BTS-330K	
R50	10K			BTS-10K	
R51	330K			BTS-330K	
R52	300Ω	7		PW7-300	
R53	10K			BTS-10K	
R54A	4000Ω	8.9	♦		
B	5000Ω	11.1	♦		
R55A	1000Ω	6	‡		
B	1500Ω	9	‡		
R56	68K			BTS-68K	Note 1
R57	68K			BTS-68K	Note 2

† Items R20, C30A and C30B are combined in one unit.
♦ Items R54A, R54B are combined in one unit.
‡ Items R55A, R55B are combined in one unit.
Note 1: Not used in some versions.
Note 2: Some versions use 47K in this application.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA David Bogen PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @ .82A	650VCT @ .115A	5VAC @ 2A	5VAC @ .63A SEC. 4 6.3VAC @ 3A	T-3141					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA David Bogen PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	7800Ω	16Ω tap @ 8Ω, 4Ω	T292-1A	Z1112	A-3027 ①			S-28X ②	① Tape 2Ω, 250Ω, 500Ω taps. ② Tape 500Ω tap.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA David Bogen PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	RF Choke	.8Ω		U501	19-3001	TV-189	4602	1 Microhenry, IRC part #CLA
L2	RF Choke	.8Ω		U501	19-3001	TV-189	4602	1 Microhenry, IRC part #CLA
L3	FM RF Coil	0Ω		U437				
L4	FM Osc. Coil	0Ω		U438				Tapped
L5	AM Loop Stick	.4Ω		H452A				
L6	Cathode Choke	.8Ω		U501	19-3001	TV-189	4602	1 Microhenry, IRC part #CLA
L7	Fil. Choke	.8Ω		U501	19-3001	TV-189	4602	1 Microhenry, IRC part #CLA
L8	AM Osc. Coil	3.7Ω		H454				Tapped @ .4Ω
L9	1st. FM IF	.6Ω	.6Ω	H294	16-3487	FM-254	1463	
L10	1st. AM IF	15Ω	15Ω	H386	16-6758	BC-352	12-C1	
L11	2nd. FM IF	.6Ω	.6Ω	H294	16-3487	FM-254	1463	
L12	2nd. AM IF	15Ω	15Ω	H386	16-6758	BC-353	12-C2	
L13	Ratio Det.	1.4Ω	.9ΩCT	H387	17-3487	FM-255	1465	Tertiary winding-.8Ω
L14	Line Choke	0Ω		U512				
L15	Line Choke	0Ω		U512				

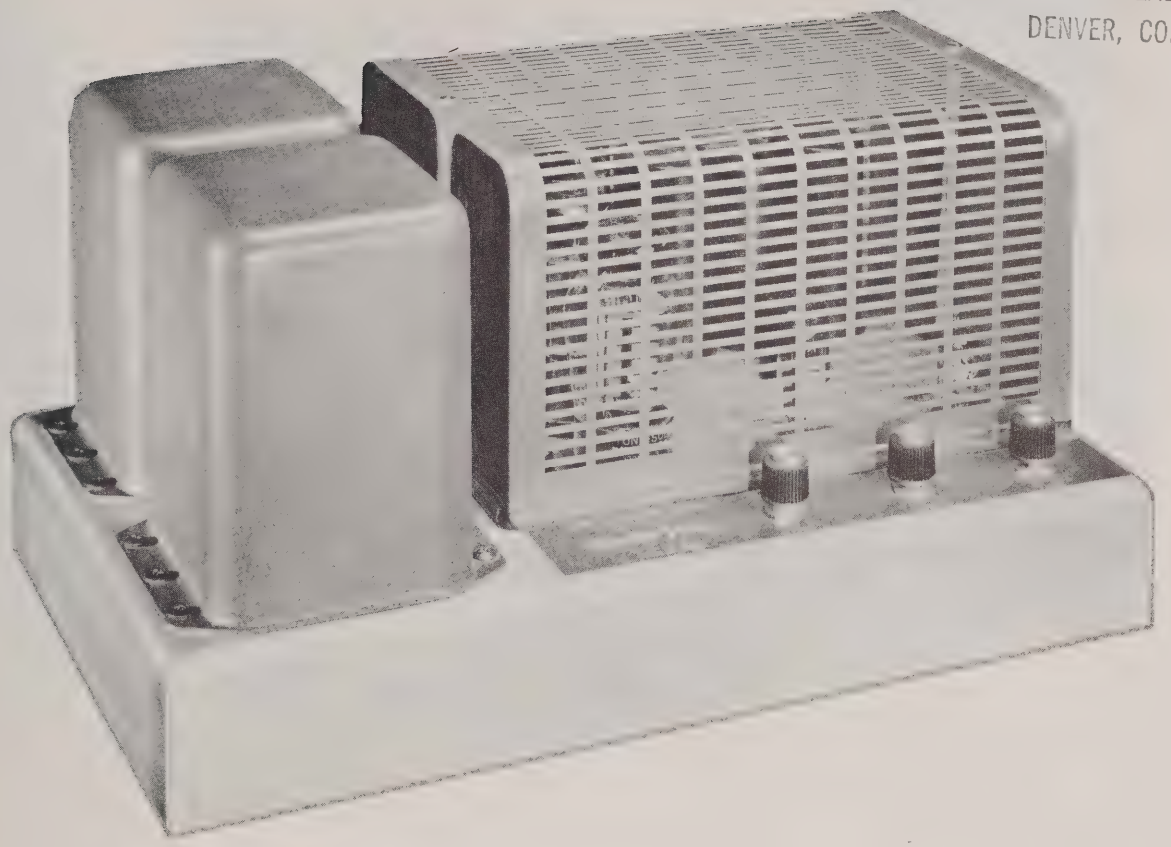
MISCELLANEOUS

ITEM No.	PART NAME	David Bogen PART No.	NOTES
M1	Pilot Light		#51
M2	Neon Light		AM Dial Pointer
M3	Neon Light		FM Dial Pointer
M4	Tuning Cap.	C638	4 Gang (AM Sections: 25-535MMF, 23-195MMF)
M5	Switch	S467B	Selector (Rotary, wafer type)
M6	Switch	S381	Magnet - Crystal (DPDT-Slide Type)

ELECTRO-VOICE MODEL A50

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

ELECTRO-VOICE
MODEL A50



ELECTRO-VOICE
MODEL A50

TRADE NAME	Electro-Voice Model A50
MANUFACTURER	Electro-Voice, Inc., Buchanan, Mich.
TYPE SET	AC Operated 50 Watt Amplifier
TUBES (Six)	Types 12AX7 AF Amp.-Phase Inverter, 12BH7A Driver, (2) 6550 Output, (2) 5U4GB Rectifier
POWER SUPPLY	105-125 Volts AC-60 Cycles RATING 1.42 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

ELECTRO-VOICE MODEL A50

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier-Phase Inverter	12AX7	
V2	Driver	12BH7A	
V3	Output	6550	
V4	Output	6550	
V5	Rectifier	5U4GB	
V6	Rectifier	5U4GB	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	Electro-Voice PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	500	4247	AFH2-72	B053	FP288	TMD-62	D-275	R1495 *
B	▲40	500							
C2A	▲40	500	4247	AFH2-72	B053	FP288	TMD-62	D-275	R1495 *
B	▲40	500							
C3	20	450	4246	AFH1-50	A046	FP144	TMS-55	S-260	TVL-1714
C4	50	100	4242	PRS150V50	BR5015	TC49	TD-50-150	FM-1550	TVA-1414

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	Electro-Voice PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	.1	200		P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C6	100			BPD-0001	DD-101	G042	801-0001	UC-531	5GA-T1	
C7	.022	400		BPD-02	DF-203	CUB4S2	817-02	PT4122	4TM-S22	
C8	.047	400		BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C9	.047	400		BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C10	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C11	.1	600		P688N-1	DF-104	CUB6P1		PT601	6TM-P1	
C12	.1	600		P688N-1	DF-104	CUB6P1		PT601	6TM-P1	
C13	.047	400		BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	
C14	.047	400		BPD-05	DF-503	CUB4S47		PT4147	4TM-S47	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	Electro-Voice PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	250K	½	J4686	B-51	A47-250K-Z	Q13-130	U44	Level
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
R2A	1Ω	2	K4686					Damping factor - wire wound
B	1800Ω	2						Damping factor - wire wound

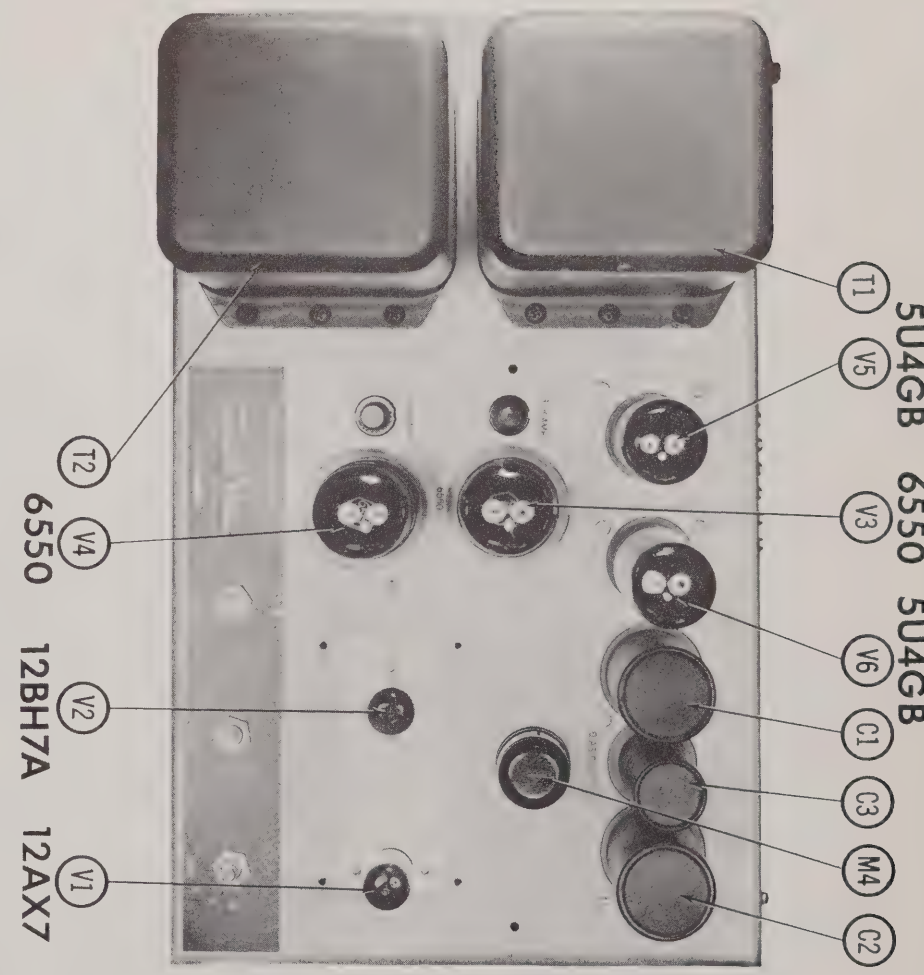
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Electro-Voice PART No.	IRC PART No.	NOTES
R3	270K		4669	BTS-270K	
R4	2.7Ω	1	4680	BW1-2.7	
R5	33K		4665	BTS-33K	
R6	1.2Meg		4656	BTS-1.2Meg	
R7	27K		4651	BTS-27K	
R8	470Ω		4654	BTS-470	
R9	27K		4651	BTS-27K	
R10	470K		4650	BTS-470K	
R11	470K		4650	BTS-470K	
R12	12K	2	4679	BTB-12K	
R13	12K	2	4679	BTB-12K	
R14	1200Ω		4658	BTS-1200	
R15	330K			BTS-330K	Note 1
R16	120Ω		4607	BTS-120	
R17	470K		4650	BTS-470K	
R18	470K		4650	BTS-470K	
R19	120Ω		4607	BTS-120	
R20	47K		4668	BTS-47K	
R21	2200Ω	2	46016	BTB-2200	
R22	2200Ω	2	46016	BTB-2200	
R23	220Ω		4664	BTS-220	
R24	56K		4652	BTS-56K	
R25	56K		4652	BTS-56K	

Note 1. Not used in some versions.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	Electro-Voice PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @1.42A	1080VCT @.057A	1080VCT @.077A	5VAC @ 3A	1582					
		SEC.4	SEC. 5	SEC.6						
		5VAC @3A	6.3VAC @4.2A	45V *						

* Bias Supply.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	Electro-Voice PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	1100Ω	16Ω tap @ 8Ω,4Ω	1581 ①						① Primary has taps for 70V winding.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	Electro-Voice PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L1	.077A	94Ω	3.7 HY	1583	C5030		C-2325	20C64	
L2	.057A	94Ω	3.7 HY	1583	C5030		C-2325	20C64	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Electro-Voice PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	3/8A 250V	20217		312.375 (3AG 3/8A)	342001	AGC 3/8	HKP
M2	3AG	3/8A 250V	20217		312.375 (3AG 3/8A	342001	AGC 3/8	HKP
M3	3AG	3A 125V	20144		313003. (3AG S/B 3A)	342001	MDX3	HKP

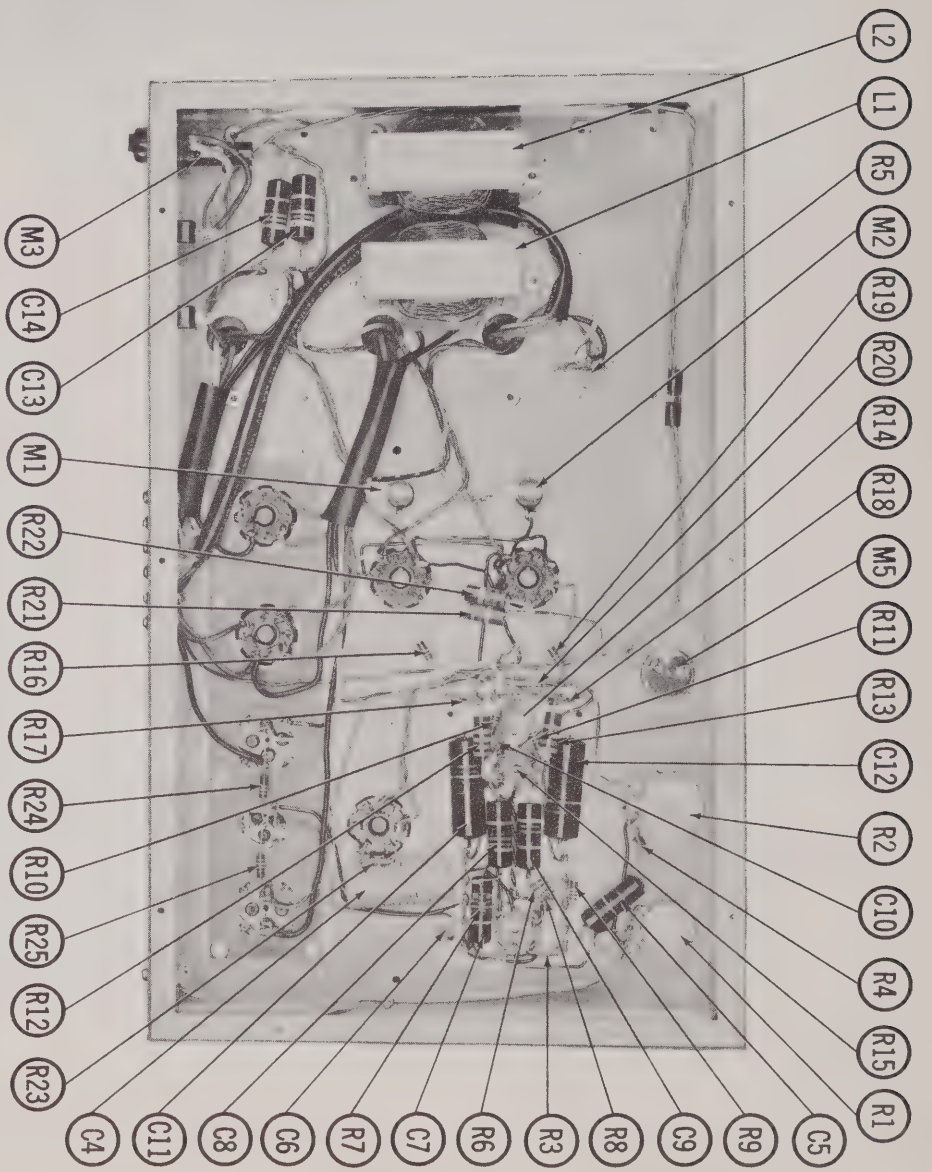
SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	Electro-Voice PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M4		8694	1159	CR-10	8S20		10	

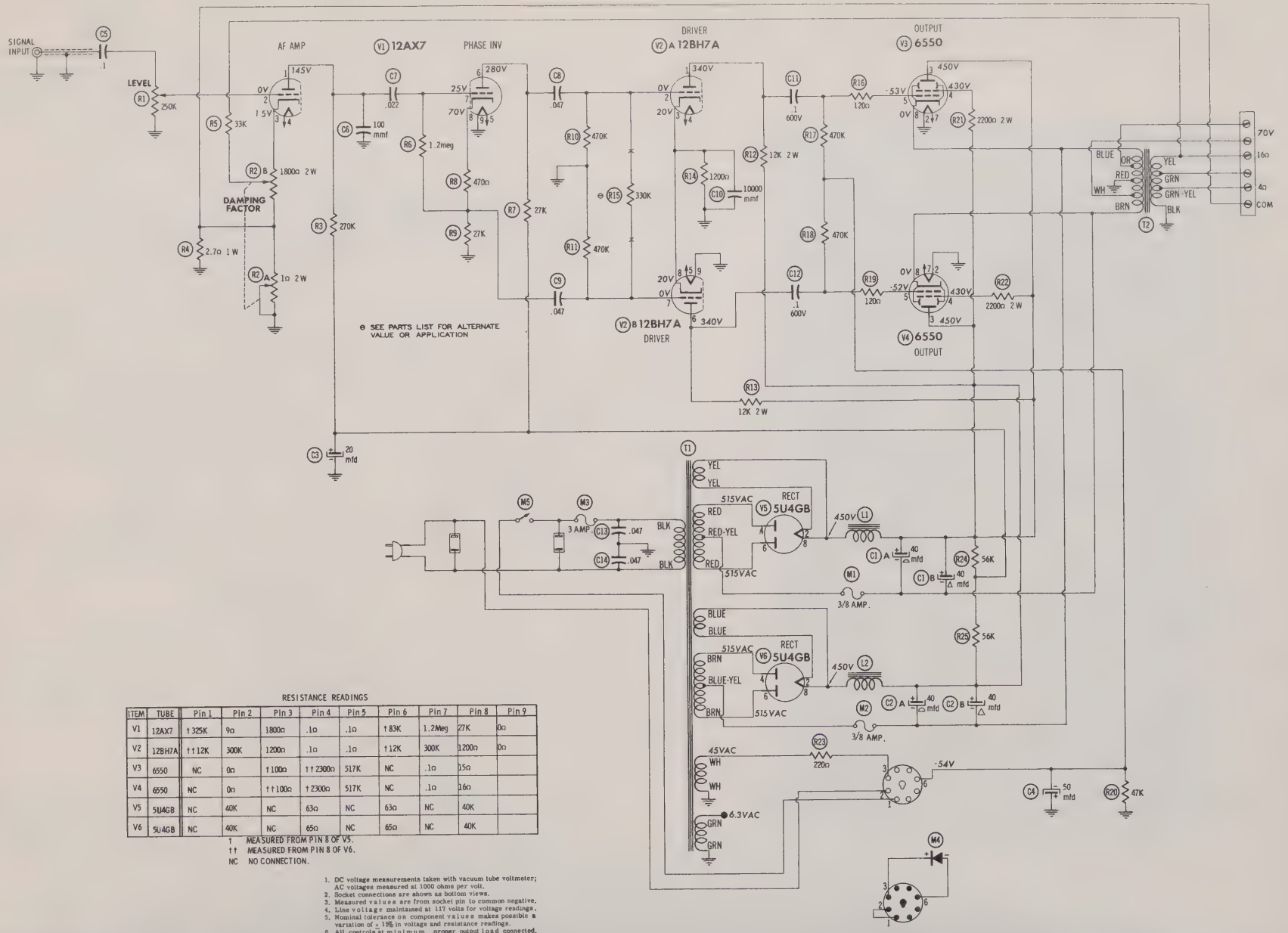
MISCELLANEOUS

ITEM No.	PART NAME	Electro-Voice PART No.	NOTES
M5	Switch	B5641	On-off (Power)

CHASSIS—BOTTOM VIEW



ELECTRO-VOICE MODEL A50



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†325K	9Ω	1800Ω	.1Ω	.1Ω	†83K	1.2Meg	27K	0Ω
V2	12BH7A	††12K	300K	1200Ω	.1Ω	.1Ω	†12K	300K	1200Ω	0Ω
V3	6550	NC	0Ω	†100Ω	††2300Ω	517K	NC	.1Ω	15Ω	
V4	6550	NC	0Ω	††100Ω	†2300Ω	517K	NC	.1Ω	16Ω	
V5	5U4GB	NC	40K	NC	63Ω	NC	63Ω	NC	40K	
V6	5U4GB	NC	40K	NC	65Ω	NC	65Ω	NC	40K	

† MEASURED FROM PIN 8 OF V5.
†† MEASURED FROM PIN 8 OF V6.
NC NO CONNECTION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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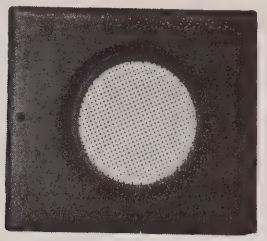

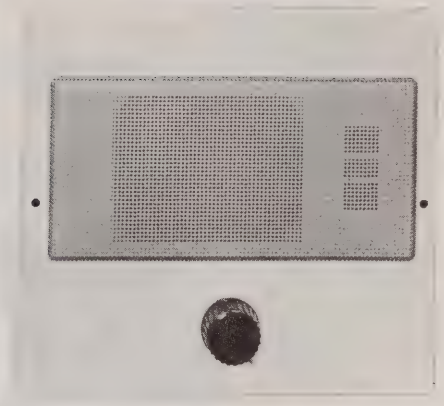

G & M EQUIPMENT
MODEL "Guardian Mark 1"

G & M EQUIPMENT
MODEL "Guardian Mark 1"

TRADE NAME	G & M Equipment, Model Guardian Mark I
MANUFACTURER	G & M Equipment Co., Inc., 7315 Varna Ave., N. Hollywood, Calif.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver, Intercommunications System and Fire Alarm
TUBES (Six)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det-AVC-AF Amp., 50C5 Output, 12AU7 Fire Alarm Multivibrator, 12AT7 AF Amp. -Squelch
POWER SUPPLY	110-120 Volts AC-DC — RATING .31 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535KC - 1700KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to chassis.	455KC (400~ Mod)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1700KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	600KC	Tune to 600KC signal.	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output while rocking tuning gang.

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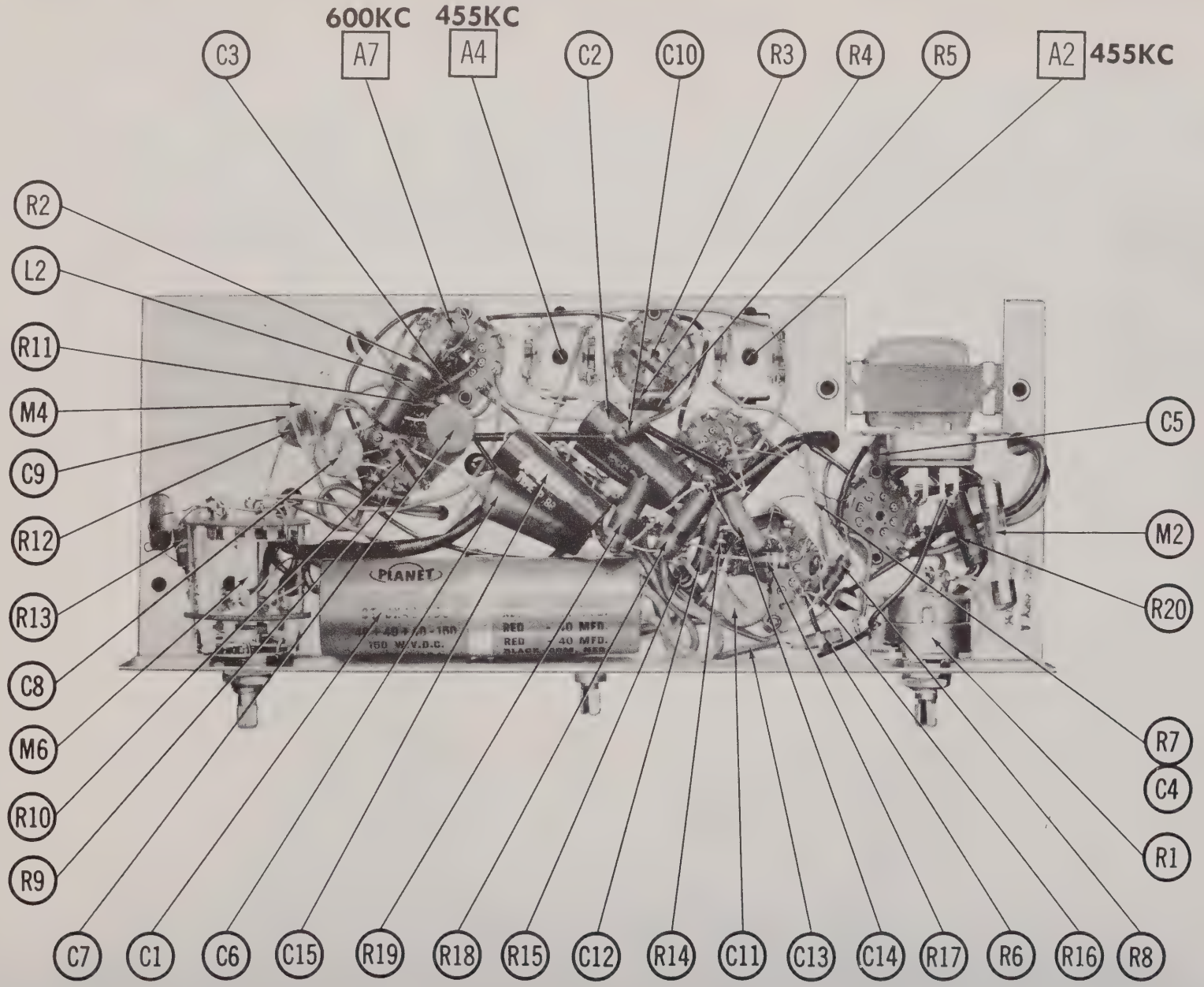


CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det. -AVC-AF Amp.	12AV6	
V4	Output	50C5	
V5	Fire Alarm Mult.	12AU7	
V6	AF Amp. -Squelch	12AT7	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA G & M Equipment PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	150		PRS150V4040	BBRT44415	TCT3115	TDLT-5	FMT-1540	TVA-3451
B	40	150		40					
C	40	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

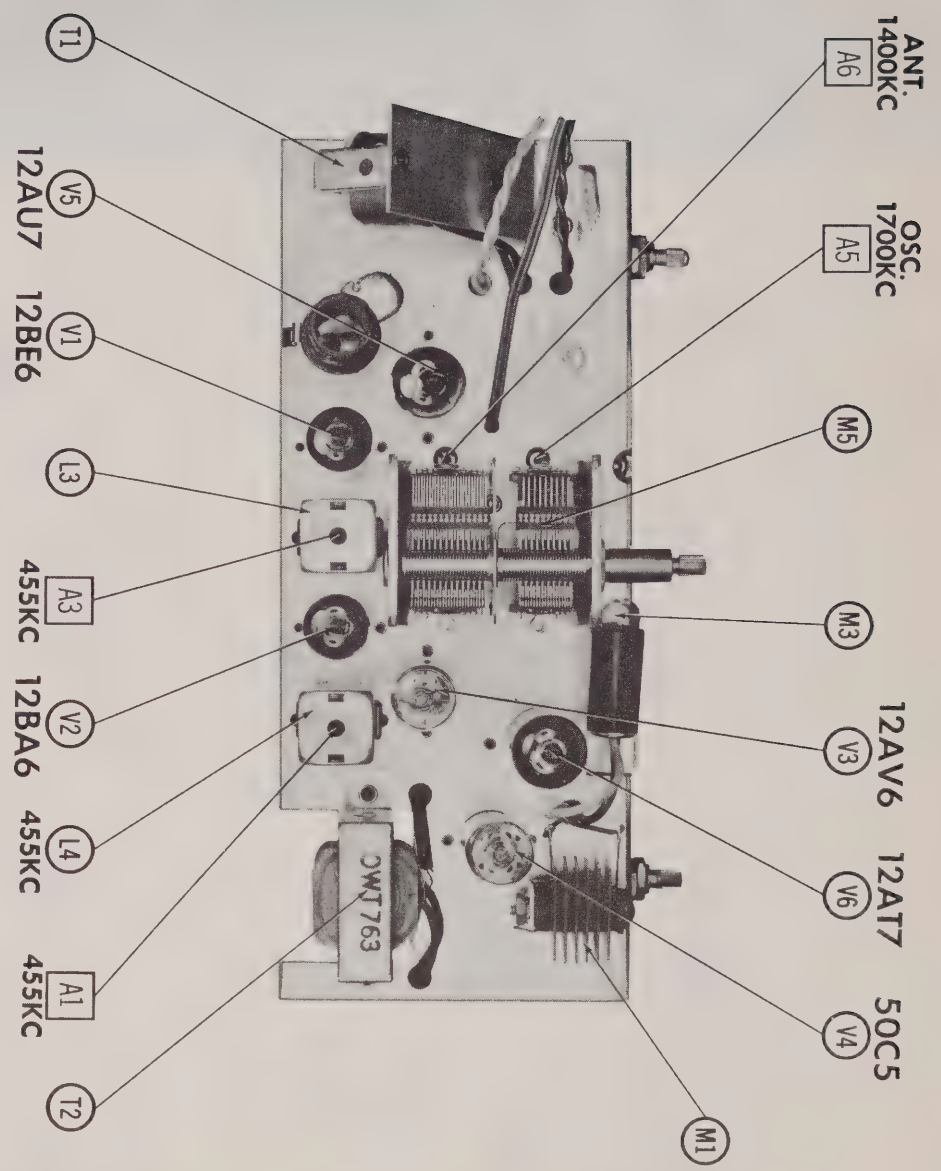
ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA G & M Equipment PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.1	200		P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C3	50			SI50	D6-500	TP30	GP1K-500	UC-545	5GA-Q5	
C4A	220									
B	5000									
C	5000		†	†PA-113-2	†PC-151	†116TM2	†1408-02		†DT-2	
D	250									
E										
C5	.01	600		BPD-01	D6-103	CUB6S1	GP3-333-103	PT611	6TM-S1	
C6	1.0	200		P288N-1.0		ST4W1		PT41	2TM-M1	
C7	2500			DI-0025	D6-252	K074	GP2-333-252	UC-5225	5GA-D25	
C8	2500			DI-0025	D6-252	K074	GP2-333-252	UC-5225	5GA-D25	
C9	10000			BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C10	520			SI510	D6-501	G034	GP2K-511	UC-535	5GA-T5	
C11	10000			BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C12	150			SI150	D6-151	G046	GP2K-151	UC-5315	5GA-T15	
C13	5000			BPD-005	DD-502	K080	811-005	DC525	5HK-D5	
C14	5000			SI5000	D6-502	TP64	GP2-333-502	UC-525	5HK-D5	
C15	.1	200		P288N-1	DF-104	CUB2P1		PT401	2TM-P1	

† Items C4A, C4B, C4C, C4D, C4E, R7A, R7B and R7C are combined in one unit. When replacing items separately, C4D and C4E should total 250MMF.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA G & M Equipment PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	CY9614	AB-60	A47-500K-Z	Q13-133	U48	Volume
B	Shaft		Not Req.	AK-4	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	KB-1	SWE-12	76-1	US-26	Attach to R1A

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	G & M Equipment PART No.	IRC PART No.	
R2	22K			BTS-22K	
R3	220Ω			BTS-220	
R4	22Meg			BTS-22Meg	
R5	1Meg			BTS-1Meg	
R6	100K			BTS-100K	
R7A	6.8Meg		†	BTS-6.8Meg	
B	470K			BTS-470K	
C	470K			BTS-470K	
R8	150Ω			BTS-150	
R9	68K			BTS-68K	
R10	1.5Meg			BTS-1.5Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	G & M Equipment PART No.	IRC PART No.	
R11	68K			BTS-68K	
R12	100K			BTS-100K	
R13	5.6Ω				
R14	470K			BTS-470K	
R15	270K			BTS-270K	
R16	1Meg			BTS-1Meg	
R17	270K			BTS-270K	
R18	1000Ω	1		BTA-1000	
R19	150Ω	1		BTA-150	
R20	22Ω	1		BTA-22	

† Items R7A, R7B, R7C, C4A, C4B, C4C, C4D and C4E are combined in one unit.

TRANSFORMER (INPUT)

ITEM No.	RESISTANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	G & M Equipment PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	.35Ω	575Ω	OWT762	G2008 ①	A-2923 ①		20A04 ①	A-7J	① Fabricate mounting
	Turns Ratio 1 : 90								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	G & M Equipment PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6100Ω	3-4Ω	OWT763	Z1004	A-2930	A-3850	24S51	S-3X	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	G & M Equipment PART No.	QUAM PART No.	RCA TYPE No.	
SP1	4"	PM	3-4Ω	4J6V400	4A07	223S1	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	G & M Equipment PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	28Ω	3.8Ω	2809				
L2	Osc. Coil	.7Ω	4Ω					
L3	Input IF	27Ω	27Ω	1655-11	16-6758	BC-352	12-C1	
L4	Output IF	27Ω	27Ω	1655-11	16-6758	BC-353	12-C2	

SELENIUM RECTIFIER

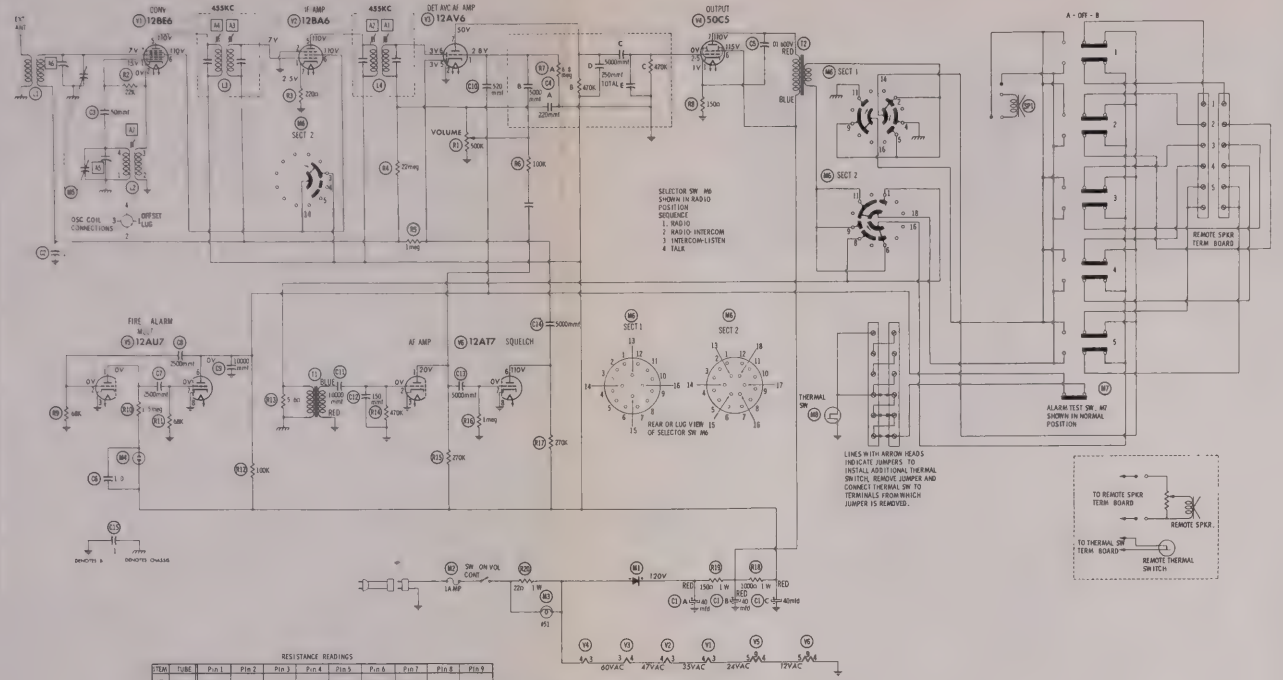
ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	G & M Equipment PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.071A		1101AH	RS100A	6S100	5M1	100A	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA						
			G & M Equipment PART No.		LITTELFUSE PART No.		BUSS PART No.		
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER	
M2	3AG P/T	1A 250V			31800l. (3AG-P/T-1A)		GJV1		

MISCELLANEOUS

ITEM No.	PART NAME	G & M Equipment PART No.	NOTES
M3	Dial Light		#51
M4	Neon Bulb		
M5	Tuning Cap.	3544	2 Gang (19-465MMF, 26-190MMF)
M6	Switch		Selector (Rotary, Wafer Type)
M7	Switch Ass'y.		Remote Speaker (Consists of 5 DPDT Slide Type Switches) and Fire Alarm Test (SPST Slide Type Switch)
M8	Switch		Thermal (Fire Alarm)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BE6	22K	1 2Ω	24Ω	35Ω	†1200Ω	†1200Ω	22Meg		
V2	12BA6	22Meg	0Ω	35Ω	47Ω	†1200Ω	†1200Ω	22Ω		
V3	12AV6	6-8Meg	0Ω	60Ω	47Ω	23Meg	500K	†470K		
V4	50C5	150Ω	470K	60Ω	38Ω	470K	†150Ω	†470K		
V5	12AU7	†1Mf	68K	0Ω	12Ω	24Ω	†100K	68K	0Ω	18Ω
V6	12AT7	†270K	470K	0Ω	8Ω	12Ω	†270K	1Meg	0Ω	8Ω

† MEASURED FROM OUTPUT OF W1

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom view.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Set is in operation unless otherwise stated as possible variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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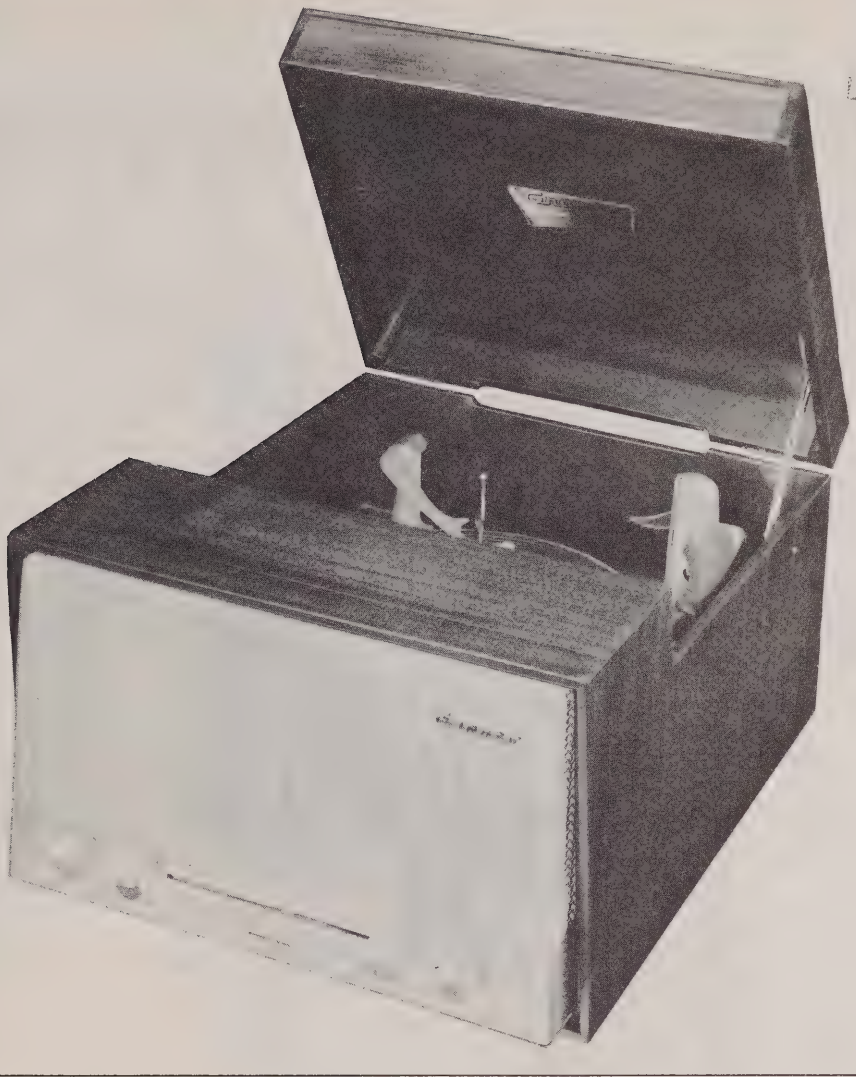
GRANCO
MODEL 750



GRANCO
MODEL 750

TRADE NAME	Granco Model 750		
MANUFACTURER	Granco Products, Inc., 36-07 20th Ave., Long Island City 5, N.Y.		
TYPE SET	AC Operated FM-AM Superheterodyne Receiver With 3 Speed Automatic Record Changer		
TUBES (Seven)	Types 12BA6 FM RF Amplifier, 12AT7 FM Mixer-Osc., 12BE6 AM Converter, 12BA6 1st IF Amplifier, 12BA6 2nd FM IF Amp. -AM Det., 19T8 Ratio Det. -AF Amp., 35C5 Output.		
POWER SUPPLY	105-120 Volts AC - 60 Cycles	RATING	.31 Amp. @ 117 Volts AC
TUNING RANGE - BROADCAST	535KC - 1650KC	FREQ.MOD.	88MC - 108MC

RECORD CHANGER UNIT - MONARCH MODEL UA6

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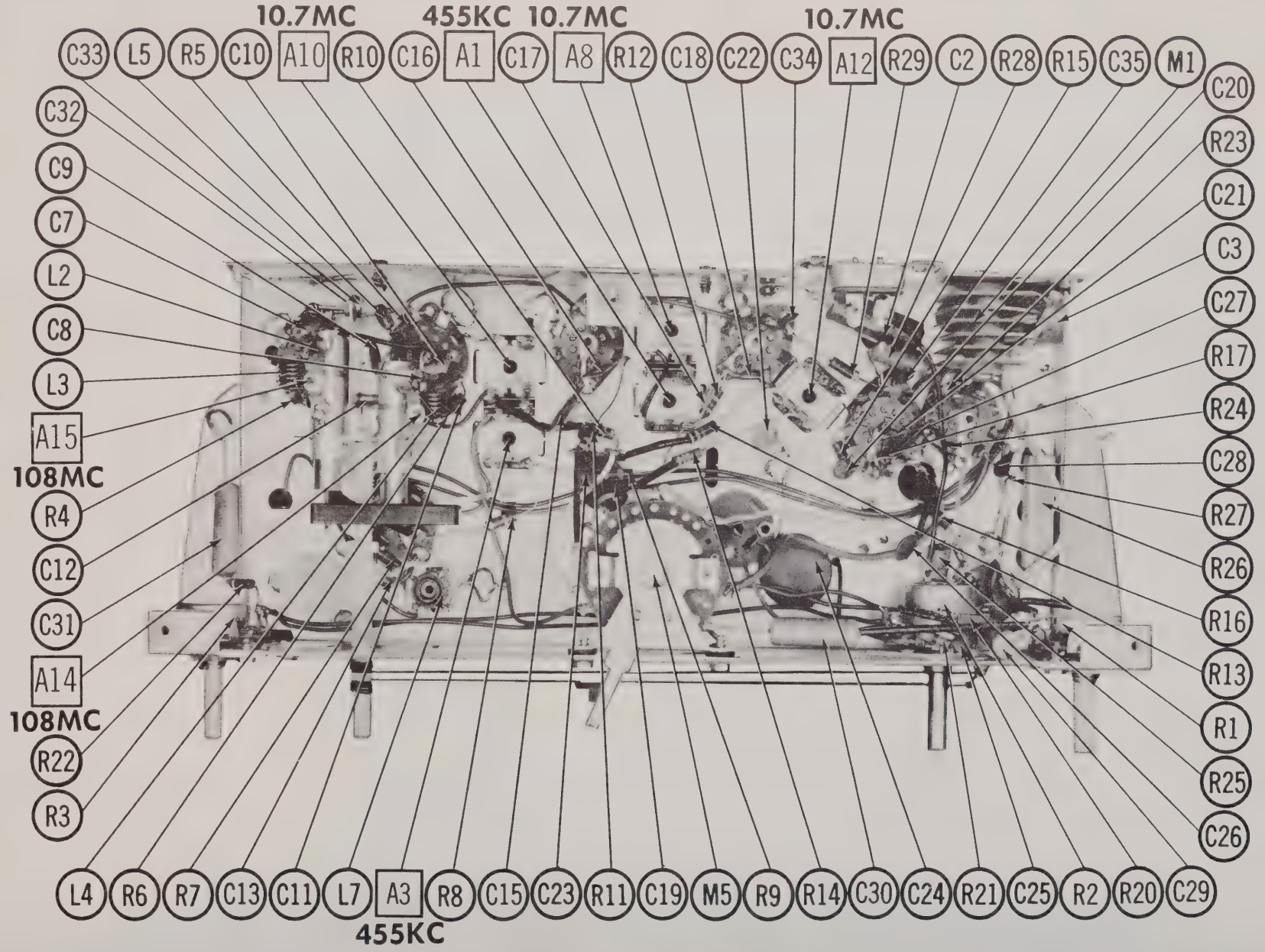
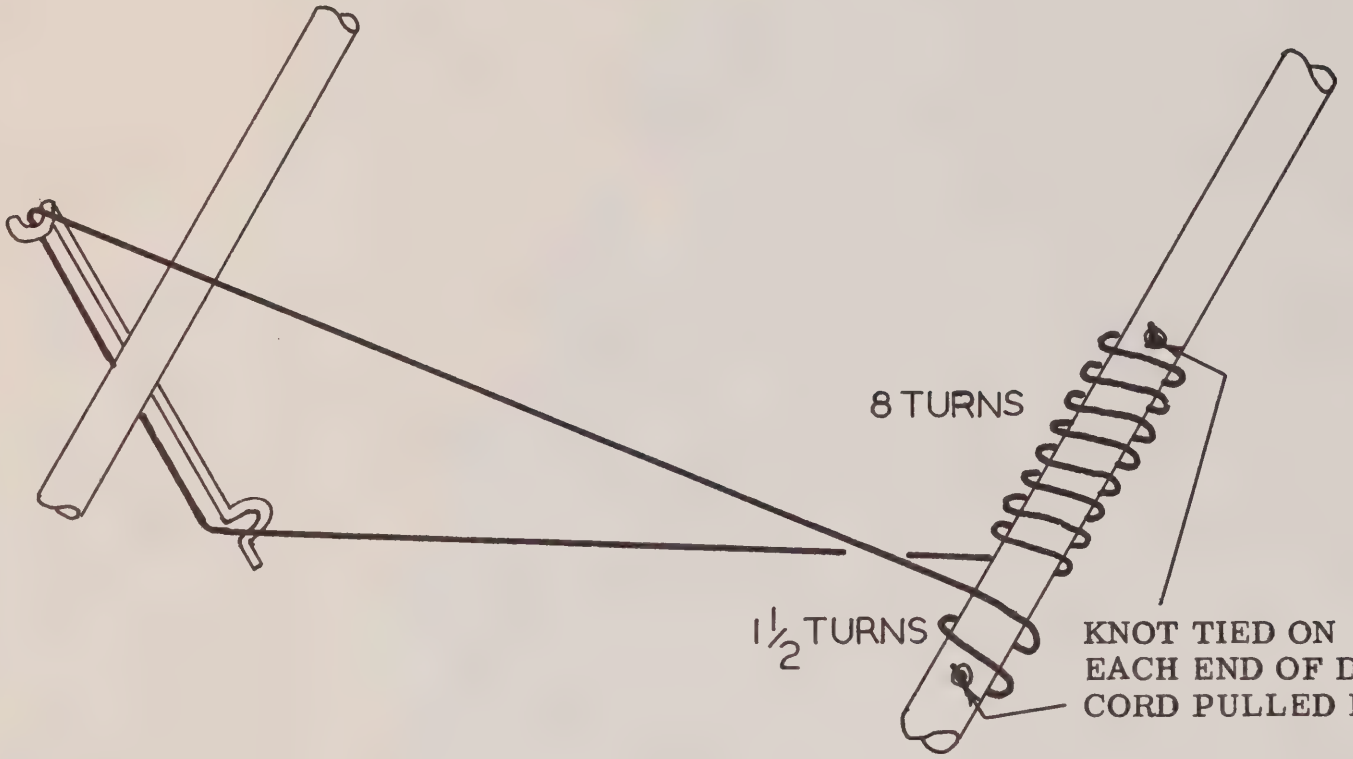
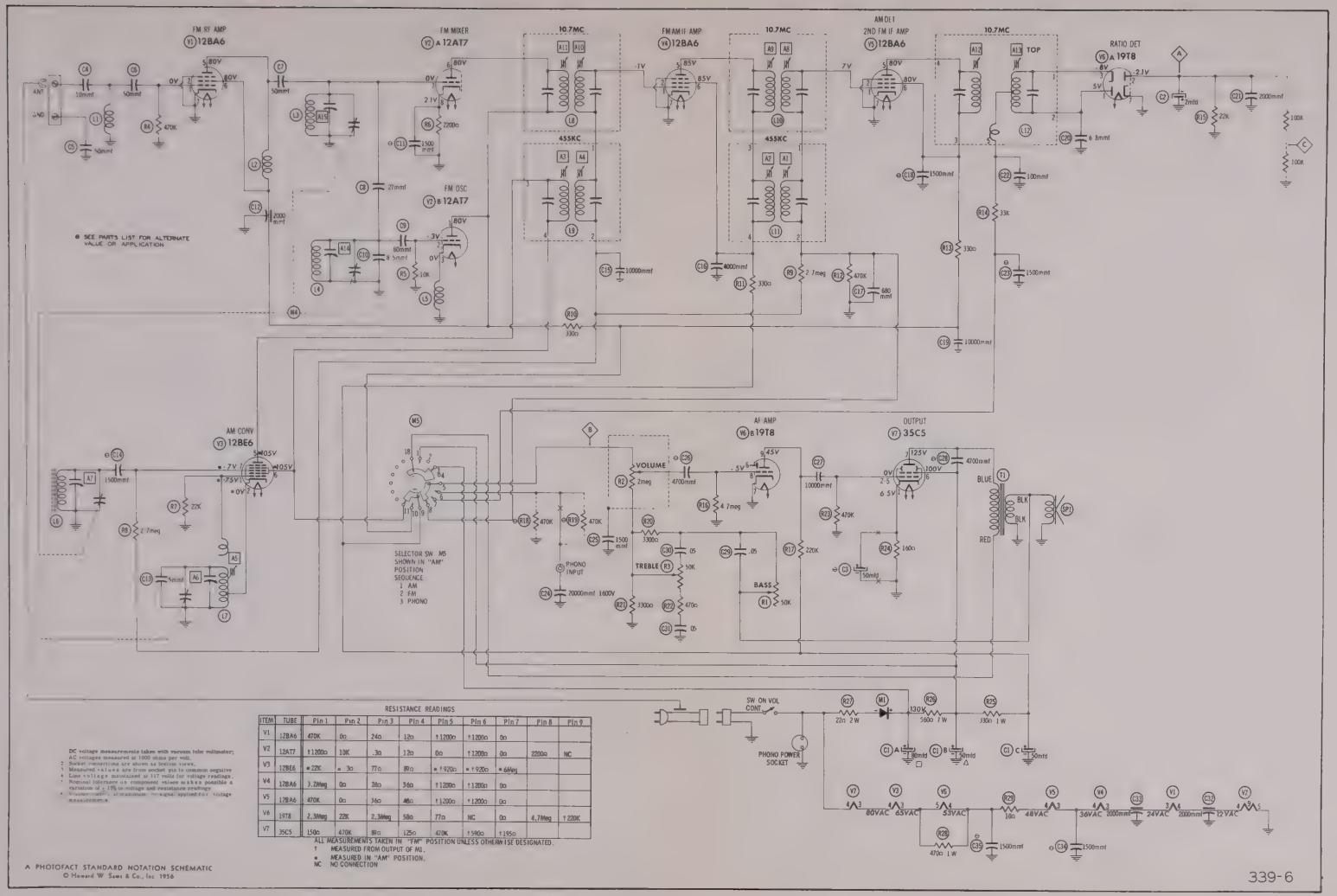


CHASSIS-BOTTOM VIEW

AM TUNING GANG FULLY CLOSED AND FM TUNING SLUGS SET TO LOWEST FREQUENCY.



DIAL CORD DRIVE



ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BA6	470K	0Ω	24Ω	12Ω	†1200Ω	†1200Ω	0Ω		
V2	12AT7	†1200Ω	10K	3Ω	12Ω	0Ω	†1200Ω	0Ω	2200Ω	NC
V3	12BE6	* 22K	* 3Ω	77Ω	89Ω	* †920Ω	* †920Ω	* 6Meg		
V4	12BA6	3.3Meg	0Ω	26Ω	36Ω	†1200Ω	†1200Ω	0Ω		
V5	12BA6	470K	0Ω	36Ω	46Ω	†1200Ω	†1200Ω	0Ω		
V6	19T8	2.3Meg	22K	2.3Meg	58Ω	77Ω	NC	0Ω	4.7Meg	†220K
V7	35C5	150Ω	470K	89Ω	125Ω	470K	†590Ω	†195Ω		

RESISTANCE READINGS

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
† MEASURED FROM OUTPUT OF M1.
* MEASURED IN "AM" POSITION.
NC NO CONNECTION

DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
Socket connections are shown as bottom views.
Measured values are from socket pin to common negative.
Line voltage maintained at 117 volts for voltage readings.
Nominal tolerance on component values to allow possible ± variation of ± 15% in voltage and resistance readings.
Wiring and parts arrangement may be changed for voltage measurements.

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339-6

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V3). Low side to chassis.	455KC (400∿ Mod)	AM	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum deflection.
2.		Loop	610KC	"	Tune to 610KC signal.	"	A5	Adjust for maximum deflection while rocking tuning gang.
3.		"	1650KC	"	Tuning gang fully open.	"	A6, A7	Adjust for maximum deflection. Repeat steps 1, 2 and 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to pin 7 (grid) of 12AT7 (V2). Low side to chassis.	10.7MC (unmod)	FM	Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A8, A9, A10, A11, A12	Adjust for maximum deflection.
5.	"	"	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD	High side to pin 7 (grid) of 12AT7 (V2). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference.	Vert. amp. to point Ⓐ. Low side to chassis.	A8, A9, A10, A11, A12	Disconnect stabilizing capacitor C2. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
5.	"	"	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A13	Reconnect stabilizing capacitor C2. Adjust so that 10.7MC occurs at center of cross-over lines similar to Fig. 2. SLIGHTLY re-touch A12 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	Two 39Ω carbon resistors	Across AM antenna lead with 39Ω in each lead.	108MC	FM	108MC (Tuning slugs out)	DC probe to point Ⓐ. Common to chassis.	A14, A15	Adjust for maximum deflection.
7.	"	"	88MC	"	88MC (Tuning slugs in)	"	L3, L4	Adjust for maximum deflection by expanding or compressing coil turns.

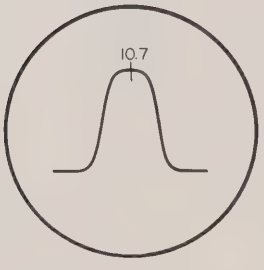


FIG. 1

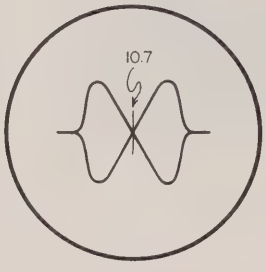


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	FM RF Amplifier	12BA6	
V2	FM Mixer-Osc.	12AT7	
V3	AM Converter	12BE6	
V4	1st IF Amplifier	12BA6	

ITEM No.	USE	TYPE	NOTES
V5	2nd FM IF Amplifier-AM Det.	12BA6	
V6	Ratio Det. -AF Amp.	19T8	
V7	Output	35C5	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA GRANCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■80	150	AC628	AFH3-11	C010	FP311. 65	TMT-12	T-050	R2302*
B	▲50	150				TC47		MT-1530	
C	50	150							
C2	2	50		PRS50V2	BBR2-50	TC302	TD-2-50	MT-0502	TVA-1301
C3	50	25	(Note 1)	PRS25V50	BR502	TC29	TD-50-25	FM-0250	TVA-1206

Note 1: Not used in some versions.
* Non catalog item.

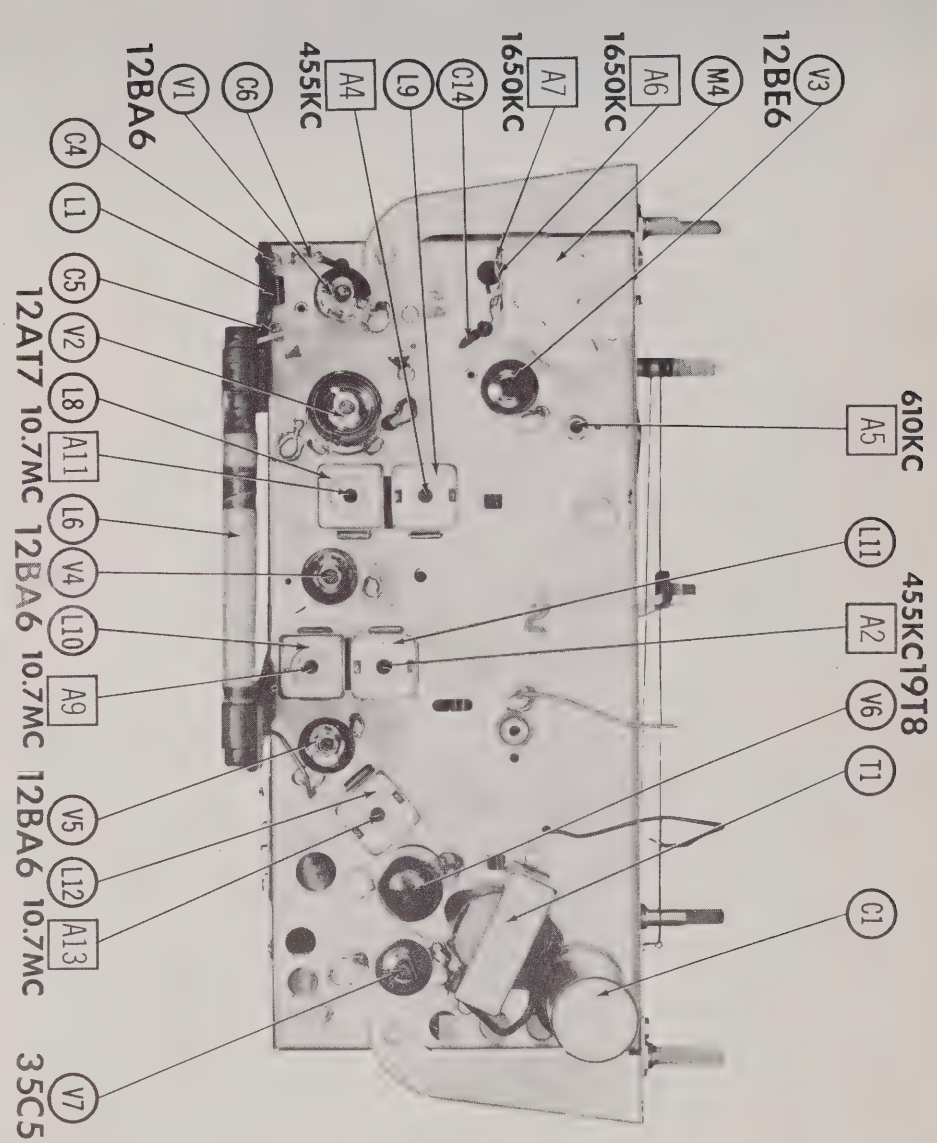
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA GRANCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C4	10			NP0-SI10	TCZ-10	TZ09	NP0A-100	ZT-541	5TCC-Q1	
C5	50			N750-SI47	TCN-50	N034	N750K-500	NT-5447	5TCU-Q47	
C6	50			N750-SI47	TCN-50	N034	N750K-500	NT-5447	5TCU-Q47	
C7	50			N750-SI47	TCN-50	N034	N750K-500	NT-5447	5TCU-Q47	
C8	. 27									
C9	80			1469-00082	TCZ-82	22R5Q82	801-820		MS-482	
C10	8. 5									
C11	1500			BPD-0015	DD-152	K071	801-0015	DC5215	5HK-D15	Note 2
C12	2000									
C13	5									
C14	1500			DI-0015	DD-152	G071	811-152	UC-5315	5GA-D15	Note 2
C15	10000			BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C16	4000			BPD-004	D6-402	K078	811-004	UC-5240	5HK-D4	
C17	680			BPD-00068	DD-681	G065	811-681	UC-5368	5GA-T68	
C18	1500			BPD-0015	DD-152	K071	801-0015	DC5215	5HK-D15	Note 2
C19	10000			BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C20	6. 8			NP0-DI6. 8	TCZ-6R8	Z013	NP0A-6R8	ZT-5568	5TCCB-V68	
C21	2000			BPD-002	DD-202	K072	801-002	DC522	5HK-D2	
C22	100			BPD-0001	DD-101	G042	801-101	UC-531	5GA-T1	
C23	1500			DI-0015	DD-152	G071	811-152	UC-5215	5GA-D15	Note 2
C24	20000	1600		P1688N-02		CUB16S2		PT1612	MB-S2	
C25	1500			BPD-0015	DD-152	K071	801-0015	DC5215	5HK-D15	
C26	4700			BPD-0047	DD-472	K079	811-0047	UC-5247	5HK-D47	Note 3
C27	10000			BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C28	4700			BPD-0047	DD-472	K079	811-0047	UC-5247	5HK-D47	Note 3
C29	. 05	200		BPD-05	DF-503	CUB2S5		PT415	2TM-S5	
C30	. 05	200		BPD-05	DF-503	CUB2S5		PT415	2TM-S5	
C31	. 05	200		BPD-05	DF-503	CUB2S5		PT415	2TM-S5	
C32	2000									
C33	2000									
C34	1500			BPD-0015	DD-152	K071	801-0015	DC5215	5HK-D15	Note 2
C35	1500			BPD-0015	DD-152	K071	801-0015	DC5215	5HK-D15	Note 2

Note 2: Some versions may use 2000MMF in this application.
Note 3: Some versions may use 4000MMF in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	GRANCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	50K	½	45-2	AB-32	A47-50K-Z			Bass
B	Shaft			AK-19	RN-3			Attach to R1A
R2A	2Meg	½	45-7	B-75-S	A47-2Meg-S	Q11-139	U56	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A
C	Switch			Not Req.	SWE-12	76-1	US-26	Attach to R2A
R3A	50K	½	45-3	AB-31	A47-50K-S			Treble
B	Shaft			AK-19	RN-3			Attach to R3A

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	GRANCO PART No.	IRC PART No.	
R4	470K			BTS-470K	
R5	10K			BTS-10K	
R6	2200Ω			BTS-2200	
R7	22K			BTS-22K	
R8	2.7Meg			BTS-2.7Meg	
R9	2.7Meg			BTS-2.7Meg	
R10	330Ω			BTS-330	
R11	330Ω			BTS-330	
R12	470K			BTS-470K	
R13	330Ω			BTS-330	
R14	33K			BTS-33K	
R15	22K			BTS-22K	
R16	4.7Meg			BTS-4.7Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	GRANCO PART No.	IRC PART No.	
R17	220K			BTS-220K	
R18	470K			BTS-470K	Note 1
R19	470K			BTS-470K	Note 1
R20	3300Ω			BTS-3300	
R21	3300Ω			BTS-3300	
R22	470Ω			BTS-470	
R23	470K			BTS-470K	
R24	160Ω			BTS-160Ω	
R25	330Ω	1		BTA-330	
R26	560Ω	7			
R27	22Ω	2		BW2-22	
R28	470Ω	1		BTA-470	
R29	10Ω			BTS-10	

Note 1: Not used in some versions.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	GRANCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2700Ω	3-4Ω	T629	Z1001	A-3025	A-3332	22S46	S-1X	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	GRANCO PART No.	QUAM PART No.	RCA TYPE No.	
SP1	5" X 7"	PM	3-4Ω	34-3-2	57A1	257S1	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	GRANCO PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	FM Ant. Coil	0Ω		AL477				
L2	RF Choke	.3Ω		AL141	19-1002		4606	2.9 Microhenries
L3	FM RF Coil	0Ω		AL455				
L4	FM Osc. Coil	0Ω		AL456				
L5	Cathode Choke	.3Ω		AL141	19-1002		4606	2.9 Microhenries
L6	AM Ant. Coil	.6Ω						
L7	AM Osc. Coil	5.5Ω		BL-574				Tap ⓐ .3Ω
L8	1st FM IF	.9Ω	.9Ω	CL472	16-3487	FM-254	1463	
L9	1st AM IF	16Ω	16Ω	BL-576	16-6758	BC-352	12-C1	
L10	2nd FM IF	.9Ω	.9Ω	CL472	16-3487	FM-254	1463	
L11	2nd AM IF	16Ω	16Ω	BL-576	16-6758	BC-353	12-C2	
L12	Ratio Det.	1.6Ω	.9ΩCT	CL473	17-3498	FM-255	1465	Tertiary winding = .5Ω

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	GRANCO PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.080A	H-100A	1004A	RS100A	6S100	5M4	100A	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	GRANCO PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M2		40-TB	A-1 & A-3	46T	0-1 or S-1 & 0-3	

ASTATIC AND ELECTRO VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA				REMARKS
	GRANCO PART No.	JENSEN PART No.	WALCO PART No.		
M3	(78RPM Needle)	†AC-28 or ♦AC-28D			† Jewel ♦ Diamond
	(33 1/3 - 45RPM Needle)	†AC-28LP or ♦AC-28LPD			

MISCELLANEOUS

ITEM No.	PART NAME	GRANCO PART No.	NOTES
M4	Tuning Cap.	602223	2 Gang (10-240MMF, 14-120MMF)
M5	Switch		AM-FM-Phono (3 Pole - 3 Position; Rotary, Wafer Type)

PHOTOFACT* Folder

*TRADE MARK

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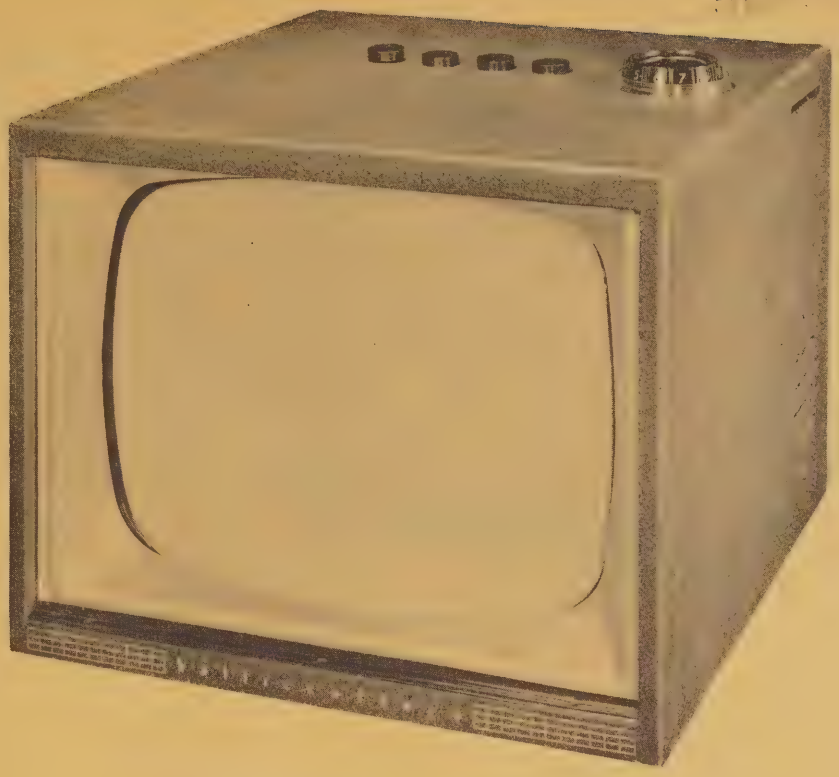

HALLICRAFTERS MODEL 17TT700M (Ch. A2005,Run 1)

TRADE NAME	Hallicrafters	MODELS	CHASSIS	
		17TT700E, 17TT700M, 17TT710, 17TT760T	A2005	Run 1
		17TT701E, 17TT701M, 17TT711, 17TT761T	B2005	Run 1
		21KT850B, 21KT850M, 21TT750M	C2005	Run 1
		21KT851B, 21KT851M, 21TT751M	D2005	Run 1
MANUFACTURER	The Hallicrafters Co., 4401 W. 5th. Ave., Chicago 24, Illinois			
TYPE SET	Television Receiver			
TUBES	Thirteen			
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING 1.1 Amp. @ 117 Volts AC		
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (intercarrier)			

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Tube Placement Chart (Top View) 5

HALLICRAFTERS MODELS 17TT700E, M, 17TT701E, M, 17TT710, 17TT711, 17TT760T, 17TT761T, 21KT850B, M, 21KT851B, M, 21TT750M, 21TT751M (Ch. A2005, B2005, C2005, D2005) Run 1

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DENVER, COLORADO

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 6 push-on type control knobs from top panel of cabinet.

2. Remove 3 wood screws and 1 metal screw. Remove rear cover.

3. Remove 2 wood screws holding AC interlock-antenna terminal bracket.

4. Disconnect speaker leads and picture tube socket.

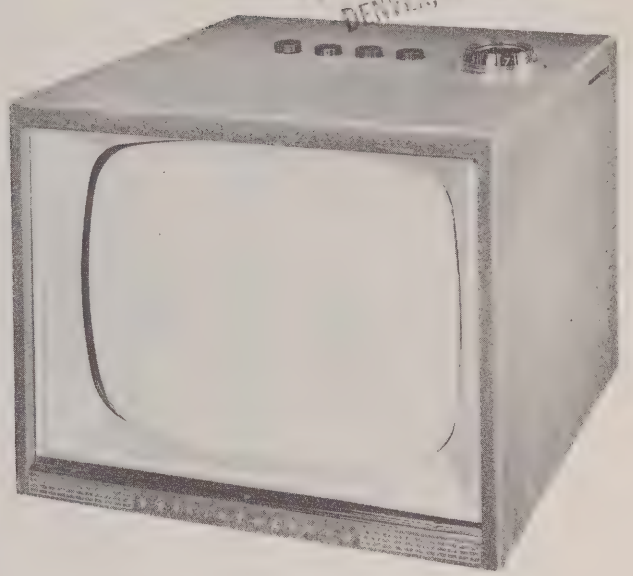
5. Remove ion trap and yoke bracket sleeve.

6. Remove 1 wood screw at the top rear of cabinet (holding chassis to cabinet.)

7. Remove 2 wing nuts. Remove speaker.

8. Remove 5 wood screws holding bottom board (front half) of cabinet, and remove HV lead.

9. Remove 2 chassis bolts. Remove chassis.



MODEL	CHASSIS
17TT700M	A2005 Run 1

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removing the channel selector and fine tuning knobs.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 3 wood screws holding plastic molding at the bottom edge of the safety glass. Remove molding and safety glass. Use extreme caution when removing safety glass.

SERVICE ADJUSTMENT LOCATION

See tube placement chart on page 5.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

To adjust the horizontal oscillator, remove the rear cover and supply power to the chassis. Set the horizontal hold control to the center of its range and adjust the horizontal frequency coil (L11) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the buzz control (R8) for maximum volume and minimum buzz.

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

HALLICRAFTERS MODELS 17TT700E, M, 17TT701E, M, 17TT710, 17TT711, 17TT760T, 17TT761T, 21KT850B, M, 21KT851B, M, 21TT750M, 21TT751M (Ch. A2005, B2005, C2005, D2005) Run 1

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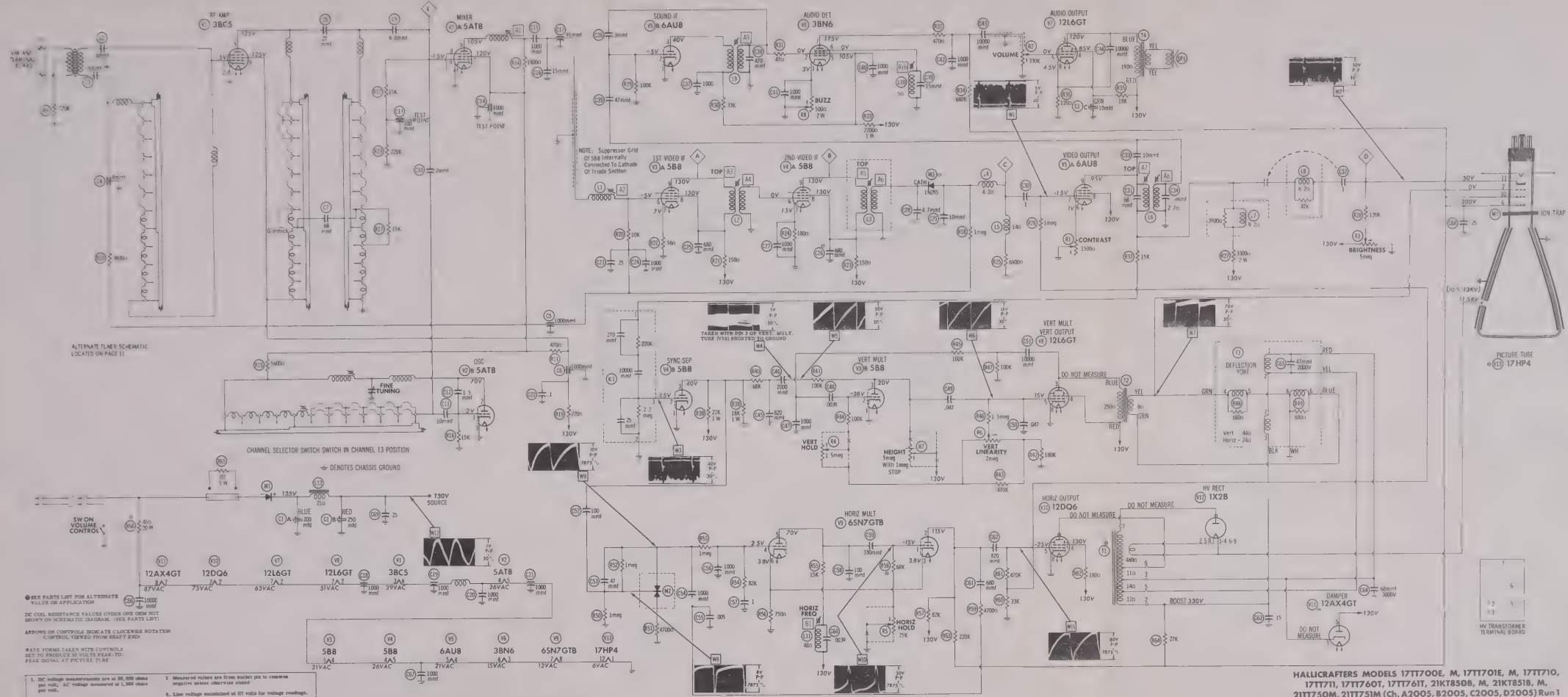
RF AMP V1 3BC5
MIXER V2 5AT8
OSC V2 5AT8
SOUND IF V5 6AU8
AUDIO DET V6 3BN6
AUDIO OUTPUT V7 12L6GT
1ST VIDEO IF V3 5B8
2ND VIDEO IF V4 5B8
VIDEO OUTPUT V5 6AU8
SYNC SEP V4 5B8
VERT MULT V3 5B8
VERT MULT VERT OUTPUT V8 12L6GT
HORIZ MULT V9 6SN7GTB
HORIZ OUTPUT V10 12DQ6
HV RECT V12 1X2B
DAMPER V11 12AX4GT
PICTURE TUBE V13 17HP4
ION TRAP
VOLUME
CONTRAST
BRIGHTNESS
FINE TUNING
TEST POINT
VERT HOLD
HEIGHT
VERT LINEARITY
HORIZ FREQ
HORIZ HOLD
BUZZ
DEFLECTION YOKE
HV TRANSFORMER TERMINAL BOARD
ALTERNATE TUNER SCHEMATIC LOCATED ON PAGE 11
CHANNEL SELECTOR SWITCH IN CHANNEL 13 POSITION
DENOTES CHASSIS GROUND
SW ON VOLUME CONTROL
135V
130V SOURCE
DO NOT MEASURE
BOOST 330V
12AX4GT 12DQ6 12L6GT 12L6GT 3BC5 5AT8
5B8 5B8 6AU8 3BN6 6SN7GTB 17HP4
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM. (SEE PARTS LIST)
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION OF CONTROL VIEWED FROM SHAFT END
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 80 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements are at 20,000 ohms per volt; AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; No signal applied.

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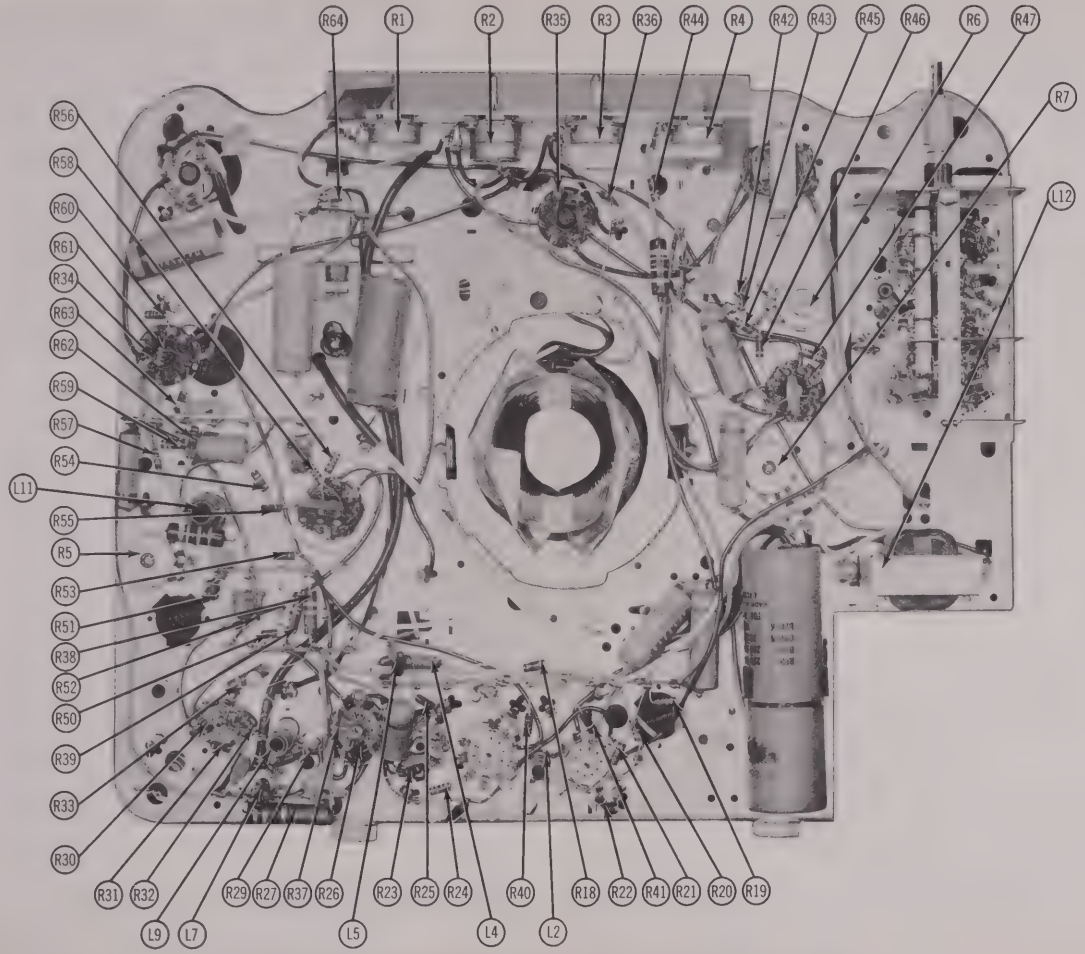
HALLICRAFTERS MODELS 17T1700E, M, 17T1701E, M, 17T1710, 17T1711, 17T1760T, 17T1761T, 21KT850B, M, 21KT851B, M, 21T1750M, 21TT751M (Ch. A2005, B2005, C2005, D2005) Run 1

HALLICRAFTERS MODELS 17T1700E, M, 17T1701E, M, 17T1710, 17T1711, 17T1760T, 17T1761T, 21KT850B, M, 21KT851B, M, 21T1750M, 21TT751M (Ch. A2005, B2005, C2005, D2005) Run 1



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

HALLICRAFTERS MODELS 17TT700E, M, 17TT701E, M, 17TT710, 17TT711, 17TT760T, 17TT761T, 21KT850R, M, 21KT851R, M, 21TT750M, 21TT751M (Ch. A2005, #2005, C2005, D2005) Rev. 1

TUBE PLACEMENT CHART

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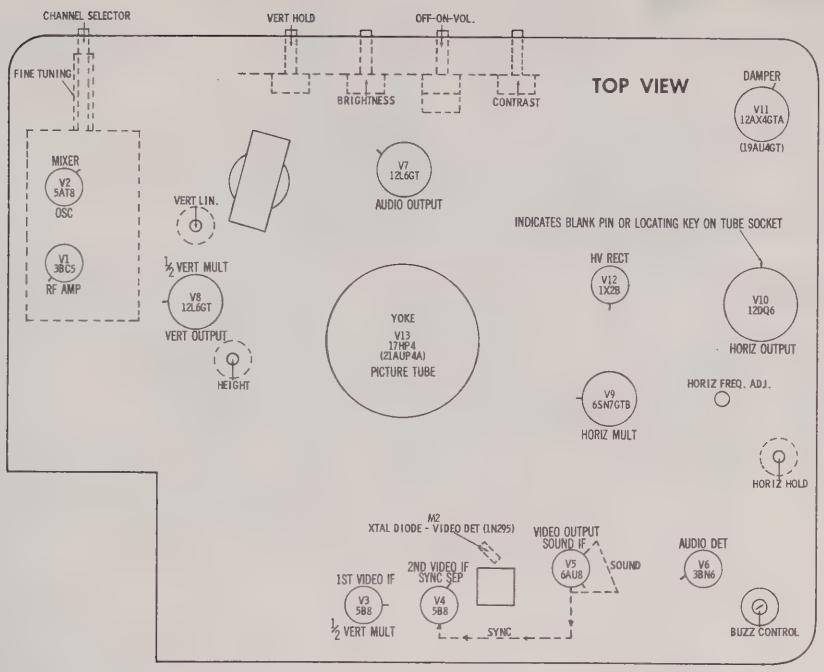


TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

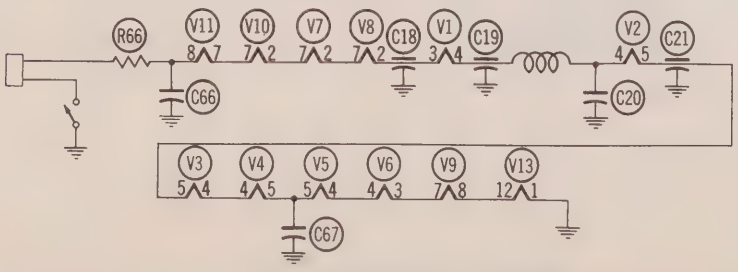
POWER SUPPLY FAILURE
No raster, no sound - Selenium Rectifier (M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V5, V13
Has pic, no sound - V5, V6, V7

SYNC FAILURE
No vert. sync - V3, V4, V8
No horiz. sync - V4, V9
No vert. or horiz. sync - V4

SWEEP FAILURE
No raster, has sound - V9, V10, V11, V12, V13
No vertical deflection - V3, V8
Poor vert. linearity or foldover - V3, V8
Poor horiz. linearity or foldover - V9, V10, V11
Narrow picture - V9, V10, V11, V12, M1
Vert. off freq. - V3, V4, V8
Horiz. off freq. - V4, V9

NOTE: Since this receiver employs tubes used in a series filament network, an open filament in any tube in series will cause the set to be inoperative. (See circuit below).



SET 339 FOLDER 7

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use an isolation transformer to protect the test equipment.
The high voltage lead should be securely taped away from the chassis.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias battery to the ungrounded side of C28. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to floating tube shield over converter tube.	44. 25MC (10MC Swp)	42. 75MC 45. 75MC	Any unused channel.	Vert. amp. thru detector (Fig. 1) to point Ⓐ. Low side to chassis.	A1, A2	Adjust for response curve similar to Fig. 2 with markers in proper positions.
2.	1000MMF	High side to pin 6 (grid) of 5B8 (V3). Low side to chassis.	"	"	"	Vert. amp. thru detector (Fig. 1) to point Ⓑ. Low side to chassis.	A3, A4	"
3.	"	High side to pin 6 (grid) of 5B8 (V4). Low side to chassis.	"	"	"	Vert. amp. thru detector (Fig. 1) to point Ⓒ. Low side to chassis.	A5, A6	"
4.	"	High side to point Ⓔ. Low side to chassis.	"	"	"	"		Retouch A1 thru A6 as needed to obtain response curve on scope similar to Fig. 3.

SOUND IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Set volume control for normal volume.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.001MFD	High side to pin 9 (plate) of 6AU8 (V5A). Low side to chassis.	4. 5MC (400∿ Mod.) (50KC Swp)	4. 5MC (400∿ Mod)	Any unused channel.	Across secondary of audio output trans. (T4).	A10	Set buzz control (R8) 90° from its maximum clockwise rotation. Adjust A10 for maximum 400∿ indication on scope.
6.	"	"	"	"	"	"	A7, A8, A9	Attenuate generator output so that signal level is below limiting level of the 6BN6 as evidenced by background hiss and noise. Adjust A7, A8 and A9 for maximum response on scope.
7.	"	"	Not Used	4. 5MC (400∿ Mod)	"	"	R8	Use high siganl generator output and adjust R8 for MINIMUM 400∿ indication on scope.
8.	"	"	4. 5MC (400∿ Mod.) (50KC Swp)	4. 5MC	"	"	A10	With volume control at low level retouch A10 for maximum 400∿ indication on scope. Remove test equipm ent. Connect antenna and tune in weakest TV station in that area and retouch R8 for MINIMUM buzz and hiss. Tune in strongest TV station and adjust A10 for clearest sound.

OSCILLATOR ALIGNMENT

The oscillator section of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion of the receiver should not be necessary in the field.

RF AND MIXER ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion of the receiver should not be necessary in the field.

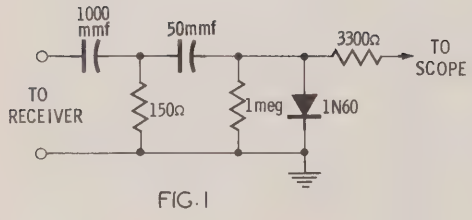


FIG. 1

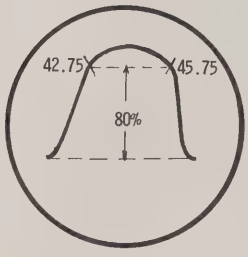


FIG. 2

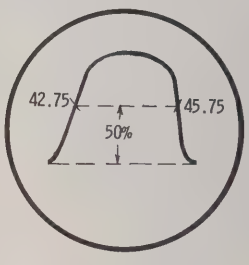
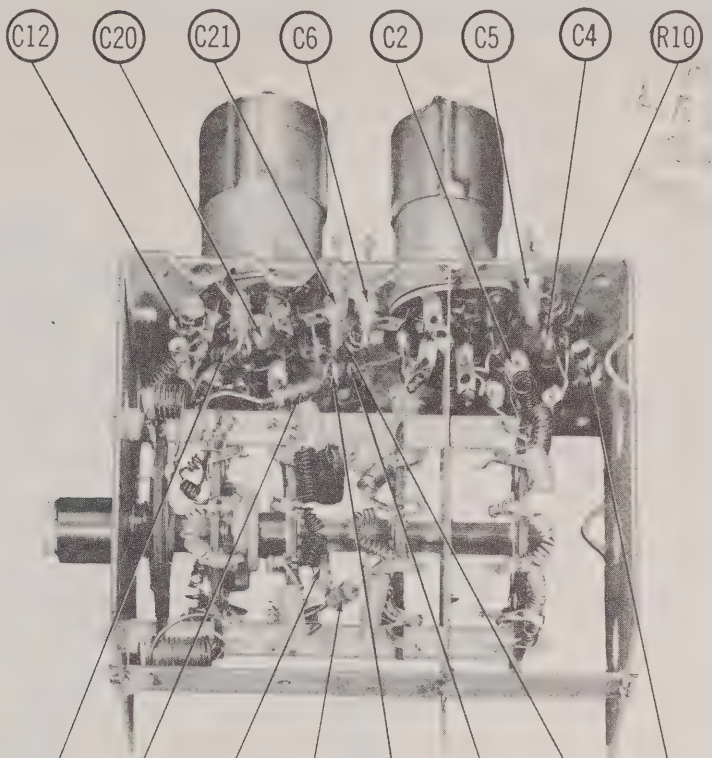
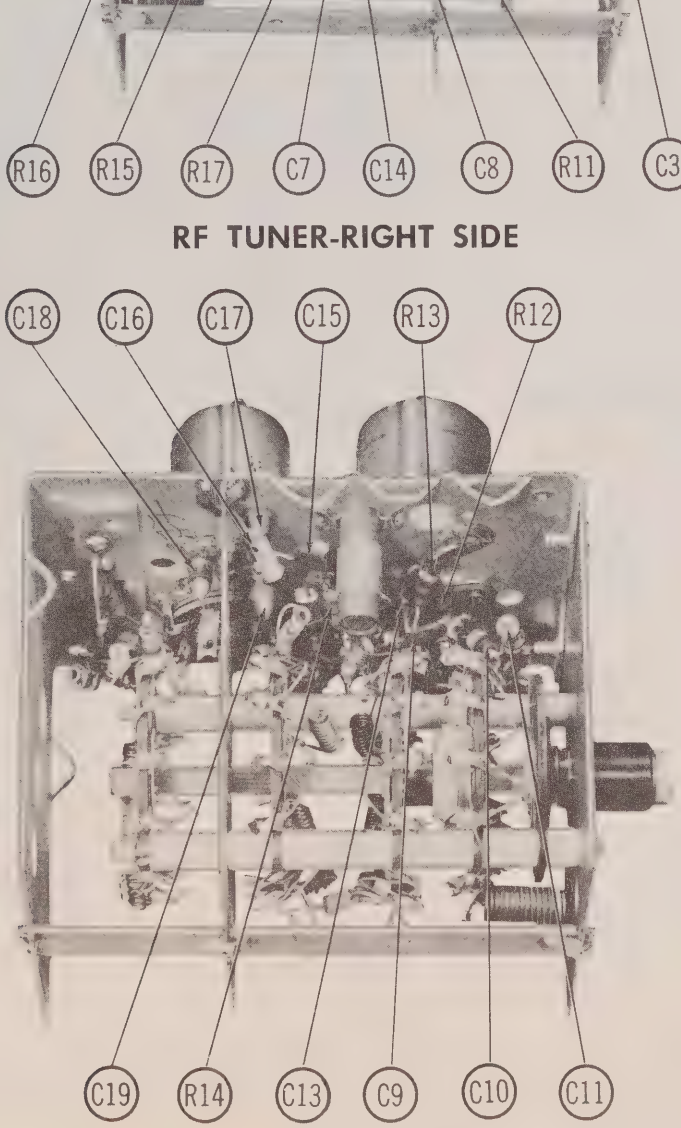


FIG. 3



RF TUNER-RIGHT SIDE

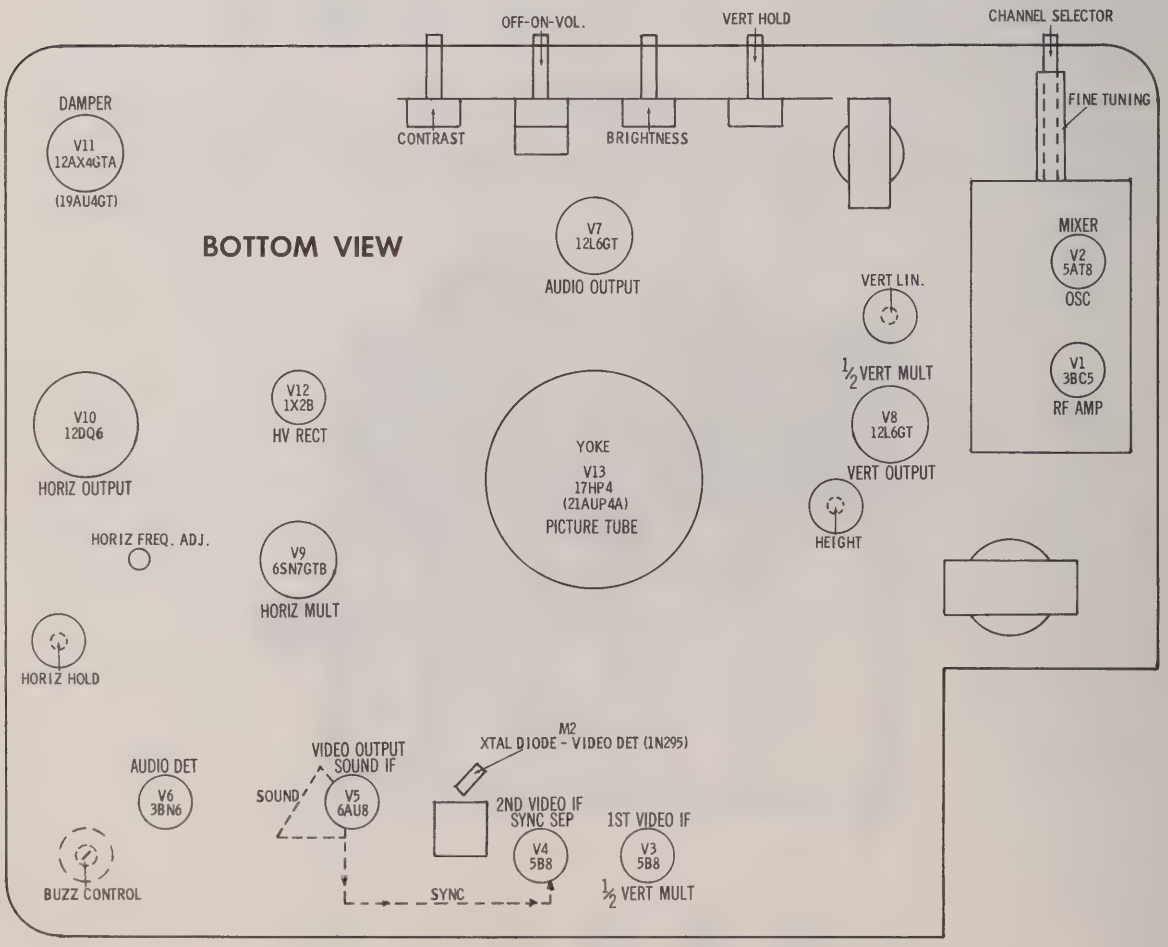


RF TUNER-LEFT SIDE

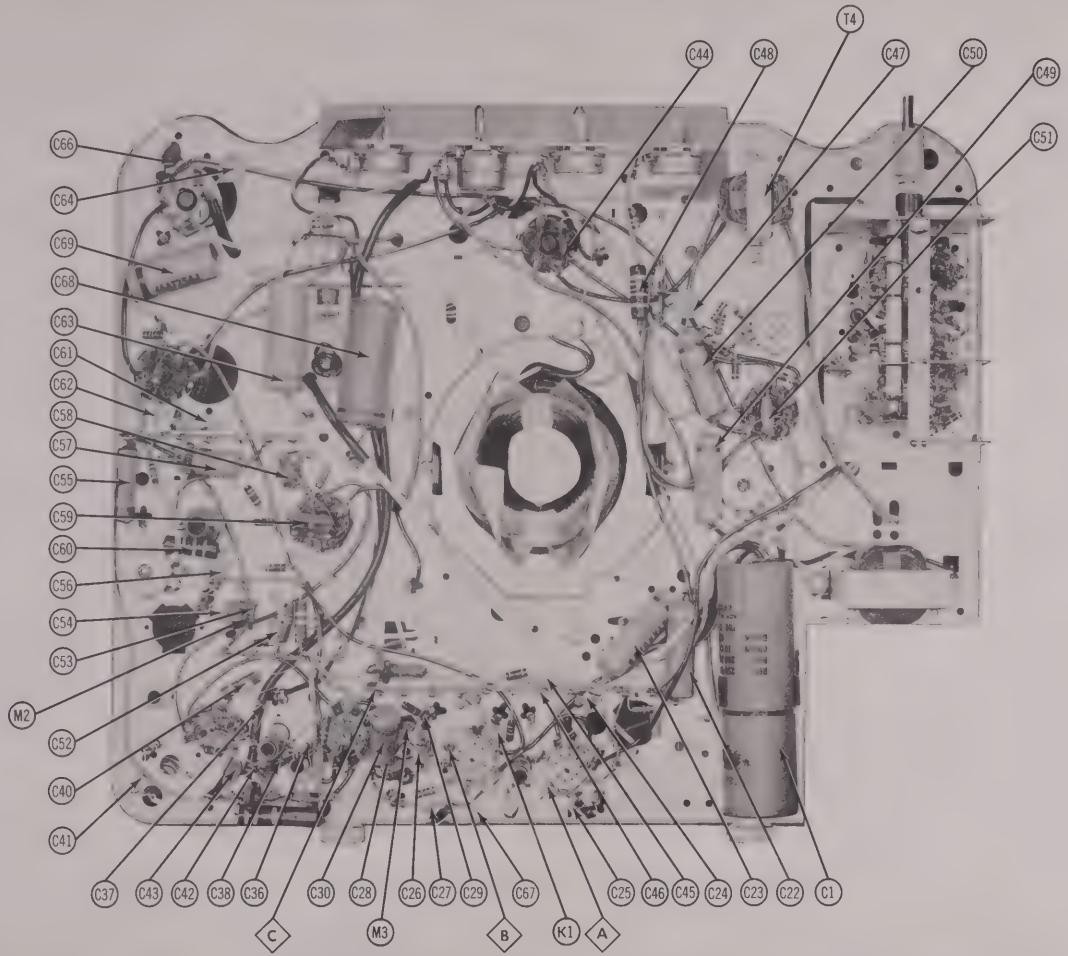
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BC5	1Meg	0Ω	9Ω	8Ω	† 240Ω	† 240Ω	0Ω		
V2	5AT8	15K	† 6000Ω	0Ω	8Ω	7Ω	† 2500Ω	† 700Ω	0Ω	235K
V3	5B8	0Ω	• 1Meg	• † 2Meg	6Ω	7Ω	1Meg	56Ω	† 170Ω	† 170Ω
V4	5B8	0Ω	2.2Meg	† 18K	6Ω	5Ω	.1Ω	180Ω	† 170Ω	† 170Ω
V5	6AU8	0Ω	100K	† 35K	4Ω	5Ω	• 70Ω	1Meg	† 21Ω	† 3300Ω
V6	3BN6	• 250Ω	47Ω	3Ω	4Ω	† 2200Ω	5Ω	† 700K		
V7	12L6GT	NC	13Ω	† 210Ω	† 18K	• 160K	NC	15Ω	120Ω	
V8	12L6GT	TP	9Ω	† 270Ω	† 21Ω	• 2Meg	TP	13Ω	0Ω	
V9	6SN7GTB	• 80K	† 82K	750Ω	2Meg	† 15K	750Ω	3Ω	2Ω	
V10	12DQ6	TP	15Ω	TP	† 200Ω	500K	TP	18Ω	0Ω	TOP CAP *11Ω
V11	12AX4GT	NC	NC	300K	NC	† 21Ω	NC	18Ω	20Ω	
V12	1X2B		PINS	1 - 8	HAVE	INF	RESISTANCE			TOP CAP * 470Ω
V13	17HP4	0Ω	11Ω	PIN 6 *27K	PIN 10 *27K	PIN 11 • † 750K	PIN 12 2Ω			

† MEASURED FROM OUTPUT OF M1.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
* MEASURED FROM PIN 3 OF V11.
TP TIE POINT
NC NO CONNECTION.



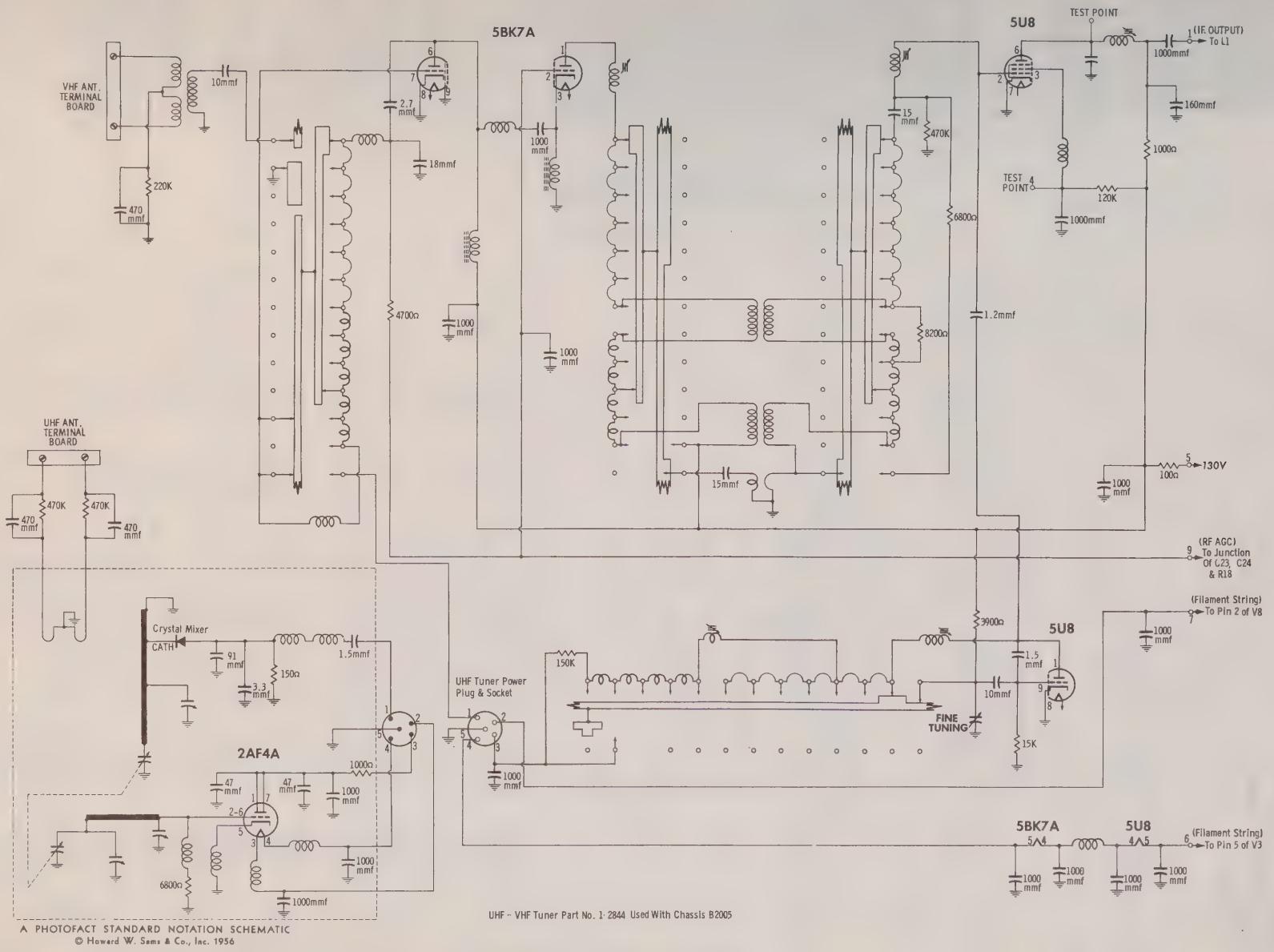
TUBE PLACEMENT CHART



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

HALLICRAFTERS MODELS 17TT7705, M, 17TT7015, M, 17TT710, 17TT711, 17TT7607, 17TT7617, 21KT3508, M, 21KT8318, M, 21TT7508, 21TT7518, M, (Ch. A2005, B2005, C2005, D2005) Run 1

SET 339 FOLDER 7



ALTERNATE VHF-UHF TUNER SCHEMATIC

HALLICRAFTERS MODELS 17T7700E, M, 17T7701E, M, 17T710, 17T711, 17T760T, 17T7611, 21KT850B, M, 21KT851B, M, 21T750M, 21T751M (Ch. A2005, B2005, C2005, D2005) Run 1

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	3BC5	
V3	Mixer-Oscillator	3A75	
V3	1st Video IF Amplifier-Vert. Mult.	5B8	
V4	2nd Video IF Amplifier-Sym. Separator	5B8	
V5	Video Output-Sound IF Amplifier	6AU8	
V6	Audio Detector	3BN6	
V7	Audio Output	12L8GT	
V8	Vert. Mult.-Vert. Output	12L8GT	
V9	Horiz. Mult.	6BN7GTB	
V10	Horiz. Output	12DQ6	
V11	Damper	12AX4GT	Note 1
V12	HV Rectifier	1X2B	

Note 1. 18AU4GT may be used in some versions.

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	Hallicrafters Part No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.		
V13	17HP4	17HP4 17HP4 21AUP4A	17HP4 17HP4 21AUP4A	17HP4 17RP4 21AUP4A	① Aluminized ② Silver screen .95"
	21AUP4A ①	21AUP4A ①	21AUP4A ②		

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA					
	CAP.	VOLT	Hallicrafters Part No.	AEROVOX Part No.	CORNELL-DUBILIER Part No.	MALLORY Part No.	SANGAMO Part No.	SPRAGUE Part No.
C1A	200	150	45-355	PRS-013		WT320	CDB-T-1015	D-986 MT-1510
B	250	150						
C	10	150						

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA								NOTES
	CAP.	VOLT	Hallicrafters Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	MALLORY Part No.	SPRAGUE Part No.		
C2	8										
C3	8					Z015					
C4	8					Z015					
C5	1000										
C6	1000										
C7	.05			TCZ-R68	TZ03		TCO-.68				
C8	.27										
C9	8.4			NPO-D18.8	TCZ-8R8	Z013	TCO-8.8	ET-5568	5TCCB-V86		
C10	3			NPO-3D3	TCZ-3D	Z005 Z006	TCO-3D	ET-541	5TCC-Q1		
C11	10										
C12	1.8										
C13	100										
C14	1000										
C15	1000			D5-001	DD-1G3	Q069	ED-1000	UC-531	5GA-D1		
C16	15			NPO-15D	TCZ-15	TZ11	TCO-15		5TCC-Q15		
C17	91										
C18	1000										
C19	1000										
C20	1000			B2PD-001	DD-1G3	K069	ED-.001	DC-531	5HK-D1		
C21	1000										
C22	.1	300	46AU1047	P2S8N-1	DF-104	CUB2P1		PT401	5TM-P1		
C23	.25	300	46AT2547	P2S8N-25		CUB2AP25		PT4025	5TM-P25		
C24	1000		47A350	B2PD-001	DD-1G3	K069	ED-.001	DC-531	5HK-D1		
C25	680		47A682A	1469-00068	D6-681	1R5T68	ED-680		MS-368		
C26	680		47A682A	1469-00068	D6-681	1R5T68	ED-680		MS-368		
C27	1000		47A350	B2PD-001	DD-1G3	K069	ED-001	DC-531	5HK-D1		Note 1
C28	4.7		47B403-6	NPO-6R4.7	TCZ-4.7	TZ07	TCO-4.7	UC-5447	5TCC-V47		
C29	10		47CA30A100K	NPO-6D10	TCZ-10	TZ09	TCO-10	ET-541	5TCC-Q1		
C30	.1	150	46A342	P2S8N-1	DF-104	CUB2P1		PT401	5TM-P1		
C31	68		47B478								
C32	.1	300	46AU1047	P2S8N-1	DF-104	CUB2P1		PT401	5TM-P1		
C33	10		47AB10-U	NPO-6D10	TCZ-10	TZ09	TCO-10	ET-541	5TCC-Q1		
C34	33		47B478								
C35	47		47CA30A478M	B347	D6-470	TP39	GP-47	UC-5447	5GA-Q47		
C36	3		47A307	NPO-3D3	TCZ-3D3	Z007	TCO-3	ET-553	5TCCB-V33		
C37	1000		47A350	B2PD-001	DD-1G3	K069	ED-.001	DC-531	5HK-D1		
C38	470	500		1464-00047	D6-471	5R5T47	ED-470		MS-347		
C39	15		47B480								
C40	1000		47A350	B2PD-001	DD-1G3	K069	ED-.001	DC-531	5HK-D1		
C41	1000		47A350	B2PD-001	DD-1G3	K069	ED-.001	DC-531	5HK-D1		
C42	1000		47A330	B2PD-001	DD-1G3	K069	ED-.001	DC-531	5HK-D1		
C43	10000		47A334	B2PD-01	DD-1G3	K083	ED-.01	DC-531	5HE-D1		
C44	10000		47A334	B2PD-01	DD-1G3	K083	ED-.01	DC-531	5HE-D1		
C45	820		47-698	B2S20	D6-821	G087	ED-820		5GA-T52		
C46	2000		47A395	D6-202	DD-302	TP56	GP-2000	UC-523	5GA-D2		
C47	1000		47-500	D1-001	DD-103	C069	ED-1000	UC-531	5GA-D1		
C48	.0036	400	46BR36E4	1464-0038		BR5D39			MS-339		
C49	.047	400	46AW473E	B2PD-05	DF-503	CUB4S47		PT4047	4TM-S47		
C50	.047	400	46AW473E	B2PD-05	DF-503	CUB4S47		PT4047	4TM-S47		
C51	10000		47-505	D1-01	DD-103	TP67	GP-10000	MC475	10HK-01		
C52	300		47CA30A301M	W150-6U300	TCN-300	TN32	NT-300	NT-531	5TCU-T1		
C53	47		47CA30A470M	B347	D6-470	TP39	GP-47	UC-5447	5GA-Q47		
C54	1000		47A330	D1-001	DD-103	G069	ED-1000	UC-531	5GA-D1		
C55	.006	300	46A1306E	B2PD-005	D6-502	CUB4D6	GP-6000	PT625	6TM-D5		
C56	1000		47A330	1464-001		BR5D1	ED-1000	MC8256	MS-31		
C57	.1	150	46A347	P2S8N-1	DF-104	CUB2P1		PT401	5TM-P1		
C58	180	500	47X36B50E	NPO-6D20	D6-181	2R5T1	ED-100	MC8235	MS-31		
C59	330	500	47X33D333K	1464-00033	D6-331	5R5T33	ED-330		MS-333		
C60	.0033	400	46BR33E4	1464-0039		BR5D39			MS-339		
C61	680	500	47EX20G681K	1464-00068	D6-681	5R5T68	ED-680		MS-368		
C62	330		47-698	1464-00062		5R5T62	ED-330		MS-363		
C63	.15	600	46AX1547	P2S8N-15		CUB3P15		PT601S	5TM-P15		
C64	60	3000	47D473	EYD-30-60	DD30-600	V3Q60	3EY-600	DC30468	30GA-Q68		
C65	47	3000	47-439	EYD-30-47	DD30-470	V3Q47	3EY-470	DC30447	30GA-Q47		
C66	10000		47A334	B2PD-01	DD-1G3	K083	ED-.01	DC-531	5HE-D1		
C67	1000		47A350	B2PD-001	DD-1G3	K069	ED-.001	DC-531	5HK-D1		
C68	.15	600	46AX1547	P2S8N-15		CUB4P15		PT6015	6TM-P15		
C69	.39	300	46A73547	P2S8N-25		CUB3P25		PT6025	5TM-P25		

Note 1. Early versions use 500MMF in this application.

CONTROLS

ITEM No	RATING		REPLACEMENT DATA				
	RESIST ANCE	WATTS	Hallicrafters Part No	CENTRALAB Part No.	CLAROSTAT Part No.	IRC Part No.	MALLORY Part No.	INSTALLATION NOTES
R1A	1500Ω	1	25B1502	AB-515		QIT-109	U-5	Contrast
B	3 Shaft		25B1503	AK-3		Not Reg.	Not Reg.	Attach to R1A
R2A	330K	1	25B1334	B-60-S	A47-500K-Z	QI3-133	TA334A	Volume
B	8 Shaft		Not Reg.	Not Reg.	FB-3	Not Reg.	Not Reg.	Attach to R2A
C	Switch		Not Reg.	Not Reg.	SWE-13	TS-1	US-36	Attach to R2A
R3	5Meg	½	25B1354			QI7-141	TA56R	Brightness
R4A	1.5Meg	½	25B1356	AB-762	A47-1.5Meg	QI1-139	TA15L	Vert. Hold
B	8 Shaft		Not Reg.	AK-3	FB-3 -S	Not Reg.	Not Reg.	Attach to R4A
R5A	75K	½	25B1305	AB-38	A47-75K-S	QI1-125	PTA35L	Horiz. Hold
B	8 Shaft		Not Reg.	AK-4	KBB-3	Not Reg.	Not Reg.	Attach to R5A
R6A	2Meg	½	25B1255	AB-75	A47-2Meg-S	QI1-139	PTA26L	Vert. Linearity
B	8 Shaft		Not Reg.	AK-4	KBB-3	Not Reg.	Not Reg.	Attach to R6A
R7A	5Meg with 1Meg stop	½	25B1098	*AB-56	*A47-4Meg -S	*QI1-141	*PTA55L	Height
B	8 Shaft		Not Reg.	AK-18	RM-3	TQ	Not Reg.	Attach to R7A
R8	5Ω	2	25A1088		39-500		FL-500	Rear-wire wound

* Connect a 1Meg resistor in series with the left hand terminal of the control and the lead connecting to the same terminal of the original control. (Control is viewed from shaft end, terminals down).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Hallicrafters Part No	IRC Part No.	
R9	220K			BTS-220K	
R10	1900Ω			BTS-1900	
R11	470Ω			BTS-470	
R12	15K			BTS-15K	
R13	220K			BTS-220K	
R14	1800Ω			BTS-1800	
R15	5600Ω			BTS-5600	
R16	15K			BTS-15K	
R17	15K			BTS-15K	
R18	1Meg		33X20X105K	BTS-1Meg	
R19	220Ω		33X20X221K	BTS-220	
R20	10K		33X20X103K		
R21	150Ω		33X20X151K	BTS-150	
R22	56Ω		33X20X560K	BTS-56	
R23	150Ω		33X20X151K	BTS-150	
R24	180Ω		33X20X181K	BTS-180	
R25	6800Ω		33X20X682K	BTS-6800	
R26	1Meg		33X20X105K	BTS-1Meg	
R27	3300Ω	2	33X20X332K	BTS-3300	
R28	120K		33X20X124K	BTS-120K	
R29	100K		33X20X104K	BTS-100K	
R30	33K		33X20X333K	BTS-33K	
R31	470		33X20X470K	BTS-47	
R33	470Ω		33X20X471K	BTS-470	
R33	2200Ω	1	33X20X222K	BTA-2200	
R34	680K		33X20X684K	BTS-680K	
R35	18K		33X20X183K	BTS-18K	
R36	180Ω		33X20X181K	BTS-180	
R37	15K		33X20X153K	BTS-15K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Hallicrafters Part No.	IRC Part No	
R38	22K	1	33X30X223K	BTA-22K	
R39	18K	1	33X30X183K	BTA-18K	
R40	68K		33X20X683K	BTS-68K	
R41	100K		33X20X104K	BTS-100K	
R42	180K		33X20X184K	BTS-180K	
R43	470K		33X20X474K	BTS-470K	
R44	100K		33X20X104K	BTS-100K	
R45	100K		33X20X104K	BTS-100K	
R46	1.5Meg		33X20X155K	BTS-1.5Meg	
R47	100K		33X20X104K	BTS-100K	
R48	680Ω		33X20X681K		
R49	680Ω		33X20X681K		
R50	1Meg		33X20X105K		
R51	470KΩ		33X20X474K		
R52	1Meg		33X20X105K		
R53	1Meg		33X20X105K		
R54	82K		33X20X823K		
R55	15K		33X20X153K		
R56	750Ω 9%		33X20X751J		
R57	82K 5%		33X20X823K	BTS-82K 5%	
R58	68K		33X20X683K		
R59	470Ω		33X20X472K		
R60	33K		33X20X333K		
R61	470K		33X20X474K		
R62	150Ω		33X20X181K		
R63	330K		33X20X334K		
R64	27K		33X20X273K		
R65	5Ω	5	24-1073	FR5.6	
R66	46Ω	20	24B1048	2D-50	Note 2

Note 1. Some models use a 82K in this application.
Note 2. Chassis A2005 uses a 45Ω in this application.
Chassis B2005 uses a 40Ω in this application.
Chassis C2005 uses a 35Ω in this application.
Chassis D2005 uses a 30Ω in this application.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							NOTES
		Hallicrafters Part No	Halldorson Part No	Merit Part No	RCA TYPE No	Ram Part No	Stancor Part No	Thordarson Part No	Triad Part No	
T1	Horiz. Output Trans.	55D285 ②								
	Horiz. Output Trans.	55D289 ③								
T2	Vert. Output Trans.	55C384	21900 ④	A-3823 ④		V307 ④	A-8113	26872 ④	A-108X ④	
T3A	Yoke-Horiz. (52MM)	39-377 ⑤	DF605 ④	MDF-73 ④	222D1 ④	V70F30/45	DY-11A ④	Y-10 ④	Y-39-1 ④	
B	Vert. (42MM)									

① Used in chassis A2005 and B2005.
② Used in chassis C2005 and D2005.
③ Use 7 to 1 turns ratio.
④ Drill new mounting hole(s).
⑤ Includes capacitor C85, resistors R49 and R49.
⑥ Use original yoke damping network.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC	Hallicrafters Part No	Halldorson Part No	Merit Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.	
T4	2.35K	3-4Ω	55C292	ZU01	A-3025	A-3322	26S68 ①	S-12X	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS				REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.		Hallicrafters Part No	QUAM Part No	RCA TYPE No	
SP1	4"	PM	3-4Ω		85C175A	4A07	223S1	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	Hallicrafters Part No.	MEISSNER Part No.	MERIT Part No.	MILLER Part No.	
L1	1st. Video IF	0Ω		51-3104			TV-181	6335
L2	2nd. Video IF	.1Ω	.1Ω	51-3105				
L3	3rd. Video IF	.1Ω	.1Ω	50-888				
L4	Series Peaking Coil	4.5Ω		53A307	19-1006		4694	35 Microhenries
L5	Shunt Peaking Coil	14Ω		51-3103	19-3080		6168	710 Microhenries
L5A	4.5MC Trap	.9Ω		51B1996				
B	1st. Sound IF	2.7Ω						
L7	Shunt Peaking Coil	9.8Ω		51-3101	19-4400 ¤		6194 ¤	396 Microhenries, wound on 39000 resistor
L8	Series Peaking Coil	5.2Ω		51-3100	19-3180 ¤	TV-184 ¤	6180 ¤	185 Microhenries, wound 47K resistor
L9	2nd. Sound IF Quadrature Coil	.1Ω 5Ω	.4Ω	51-3103 51A1857				1680

* Parallel with 39000 resistor.
¤ Parallel with 47K resistor.

TRANSFORMER (HORIZ., OSC.)

ITEM No.	DC RES.		Hallicrafters Part No.	REPLACEMENT DATA						NOTES
	PRI.	SEC		MEISSNER Part No.	MERIT Part No.	MILLER Part No.	RCA TYPE No	Ram Part No.	Thordarson Part No	
L11	48Ω		51B2109	19-1576	TV-183	6310			1HB-5	

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE IN CURRENT 1000 (^)	Hallicrafters Part No.	Halldorson Part No.	Merit Part No.	Stancor Part No.	Thordarson Part No	Triad Part No	NOTES
L13	.200A	31Ω	.5H	56B234	C6040		C-2357	25C41	C-32X	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Hallicrafters Part No.	REPLACEMENT DATA		NOTES
K1	Sync Coupler	220K, 2.2Meg, 270MMF, 10000 MMF, 25MMF	46A046	Aerovox Centralab Cornell-Dubilier Erie Sprague	PA-533 PC-265 ST-2	Note 1

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	Hallicrafters Part No.	FEDERAL Part No.	INTERNATIONAL Part No.	MALLORY Part No.	RADIO RECEPTOR Part No.	SARKES TARZIAN Part No.	
M1	.280A	27A218	1236A	MR300	6S300	6Q4	300	1 Used

SELENIUM DIODE

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	Hallicrafters Part No.	FEDERAL Part No.	INTERNATIONAL Part No.	MALLORY Part No.	RADIO RECEPTOR Part No.	SARKES TARZIAN Part No.	
M2		27-226	1218 ①	1T1 ①				① Two required

CRYSTAL DIODES

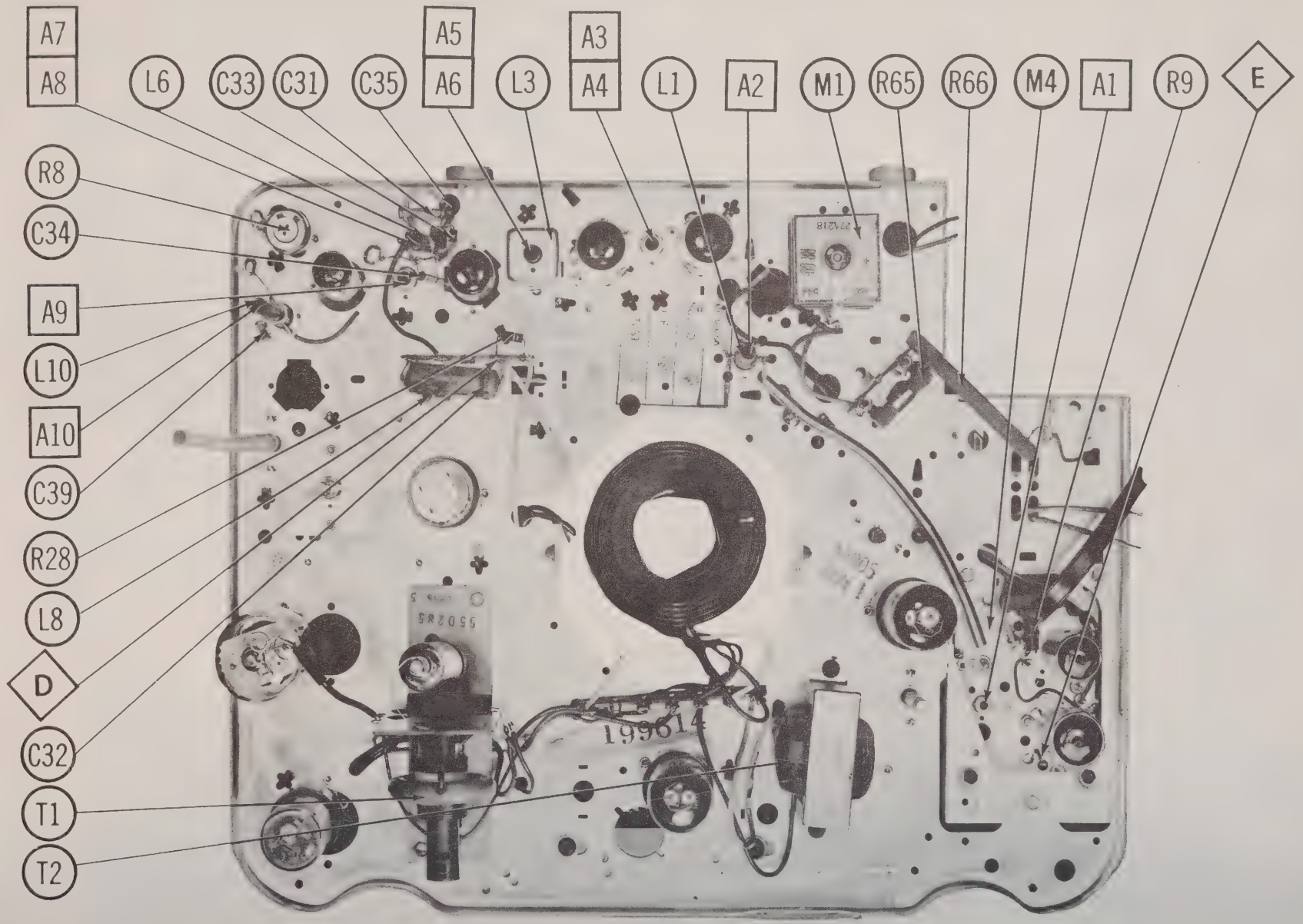
ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		Hallicrafters Part No.	SYLVANIA Part No.	
M3	IN295 *	1N1084	1N60	Video Detector (Pigtail)

* Some versions may use crystal diode type CK-706A in this application.

MISCELLANEOUS

ITEM No.	PART NAME	Hallicrafters PART No.	NOTES
M4	Tuner	1-3819	VHF - Chassis A2005 (Run 1) & C2005 (Run 1)
M5	Tuner	1-3844	VHF-UHF Combination - Chassis B2005 (Run 1), D2005 (Run 1)
M6	Centering Device	21B218	
M7	Ion Trap	21B186	

HALLICRAFTERS MODELS 17TT7DOK, M, 17TT7D1K, M, 17TT7D10, 21TT7T1M, 17TT7T1M, 17TT7D50K, M, 21TT7T1M, 17TT7T50M, 21TT7T51M (CH. A2005, B2005, C2005, D2005) Rev 1



CHASSIS TOP VIEW

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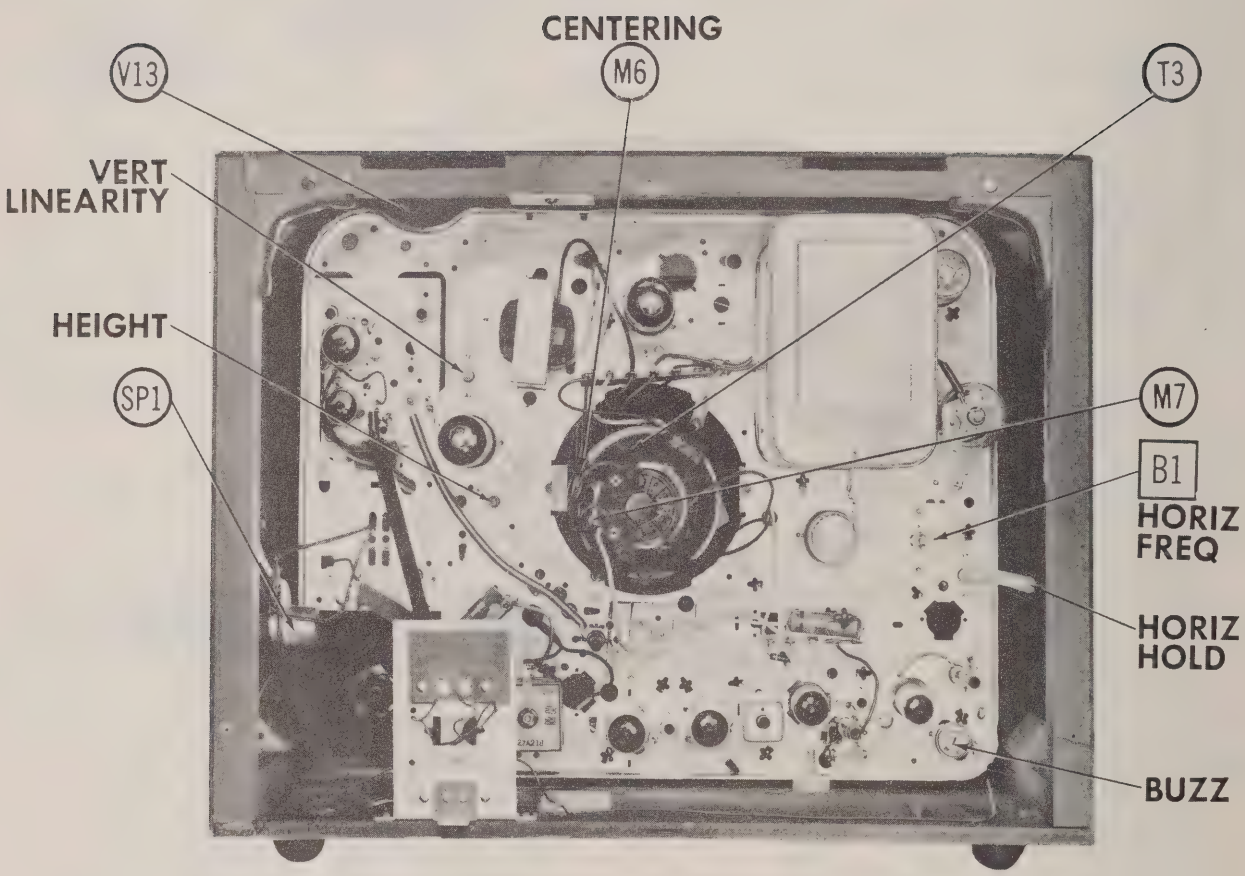
3924 MEADE ST.
DENVER, COLORADO



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

If the horizontal hold control fails to maintain sync, set it in the mid-range position and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. Check other channels and if necessary, readjust B1 slightly for best sync on all channels.

PROPERTY OF
[illegible]ANKENSH[illegible]
[illegible]DE ST.
[illegible]MD

HARMAN-KARDON
MODEL C100

HARMAN-KARDON
MODEL C100

TRADE NAME	Harman-Kardon Model C100
MANUFACTURER	Harman-Kardon, Inc., 520 Main St., Westbury, L.I., N.Y.
TYPE SET	AC Operated Equalizer Amplifier
TUBES (Six)	Types 12AX7 Preamplifier, 12AT7 AF Amplifier-Phase Inverter, 12AU7 Driver, (2) 6CM6 Output, 5Y3GT Rectifier
POWER SUPPLY	105-125 Volts AC-60 Cycles RATING .585 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

HARMAN-KARDON MODEL C100

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Preamplifier	12AX7	
V2	AF Amp.-Phase Inv.	12AT7	
V3	Driver	12AU7	
V4	Output	6CM6	
V5	Output	6CM6	
V6	Rectifier	5Y3GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Harman-Kardon PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	40	450		PRS450V40	BR4045	TC78	TD-40-450	FM-4540	TVA-1712
C2A	▲20	400		AFH3-36	D124	FP376.5	TMT-153	T-625	TVL-3780
B	■20	350							
C	▲20	25	(Note 1)						
C3	25	25	(Note 1)	PRS25V25	BR252	TC26	TD-25-25	FM-0225	TVA-1205
C4	10	350		PRS350V10	BR1235	TC62	TD-12-350	FM-3512	TVA-1604

Note 1. When C2C is 50MFD, C3 is not used.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

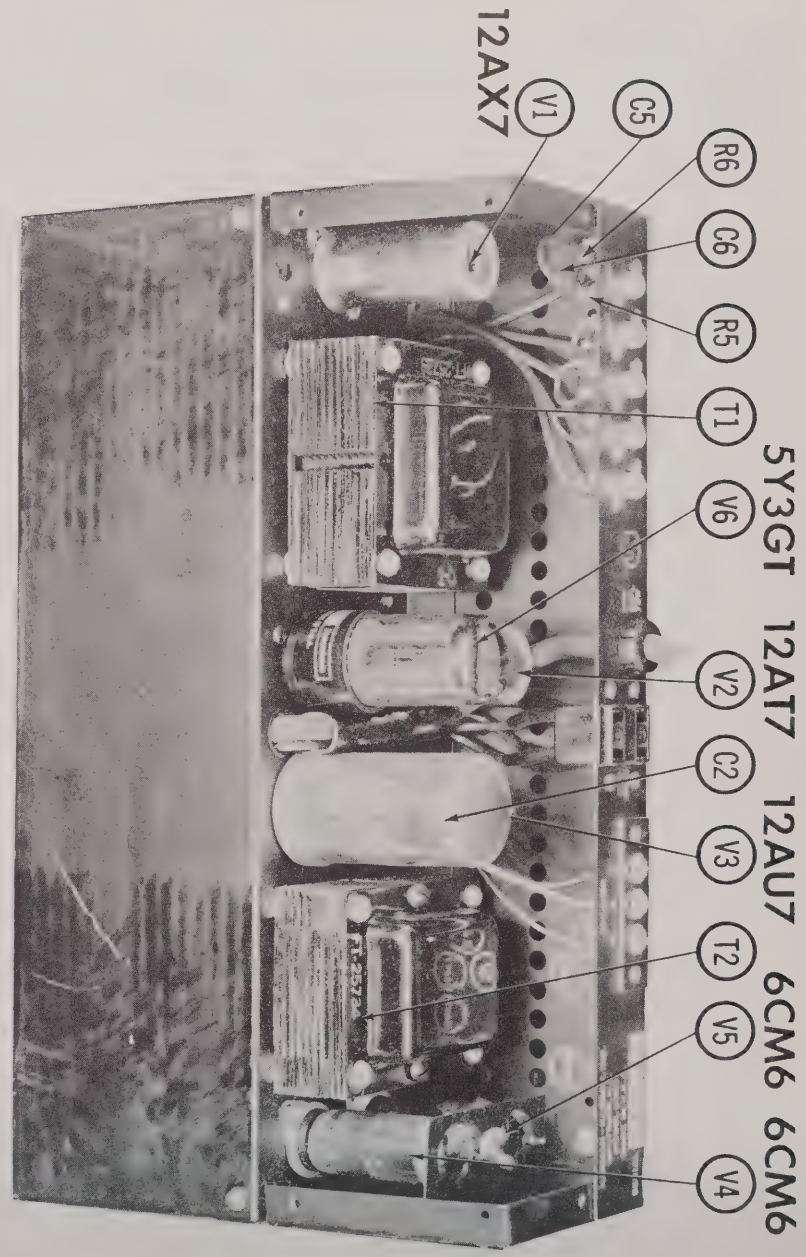
ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Harman-Kardon PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C6	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C7	4700			SI4700	D6-472	TP63	GP2-333-472	UC-5247	5HK-D47	
C8	270			SI270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	
C9	1000			SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C10	4700			SI4700	D6-472	TP63	GP2-333-472	UC-5247	5HK-D47	
C11	2200			SI2200	D6-222	TP57	GP2-333-222	UC-5222	5HK-D22	
C12	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C13	.05	200		BPD-05	DF-503	CUB2S5		PT415	2TM-S5	
C14	.05	200		BPD-05	DF-503	CUB2S5		PT415	2TM-S5	
C15	270			SI270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	
C16	4700			SI4700	D6-472	TP63	GP2-333-472	UC-5247	5HK-D47	
C17	2000			SI2000	D6-202	TP56	GP2-333-202	UC-522	5HK-D2	
C18	.02	200		BPD-02	DF-203	CUB2S2	817-02	PT412	2TM-S2	
C19	.01	200		BPD-01	D6-103	CUB4S1	GP3-333-103	PT411	4TM-S1	
C20	.02	200		BPD-02	DF-203	CUB2S2	817-02	PT412	2TM-S2	
C21	.1	400		P488N-1	DF-104	CUB4P1		PT401	4TM-P1	Note 1
C22	.05	400		BPD-05	DF-503	CUB4S5		PT415	4TM-S5	
C23	.05	400		BPD-05	DF-503	CUB4S5		PT415	4TM-S5	
C24	.05	400		BPD-05	DF-503	CUB4S5		PT415	4TM-S5	
C25	.05	400		BPD-05	DF-503	CUB4S5		PT415	4TM-S5	
C26	2200			SI2200	D6-222	TP57	GP2-333-222	UC-5222	5HK-D22	Note 1
C27	.05	600		BPD-05	DF-503	CUB6S5		PT615	6TM-S5	

Note 1. Not used in some versions

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Harman-Kardon PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	RV25795	ABT-165		Q18-137XX	UDT-283	Loudness - tapped @ 350K and 650K
B	Shaft			AK-4		Not Req.	Not Req.	Attach to R1A
C	Switch			KB-1		76-1	US-26	Attach to R1A
R2A	1Meg	½	RV25794	AB-70	A47-1Meg-Z	Q13-137	U53	Bass
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	Attach to R2A
R3A	1Meg	½	RV25794	AB-70	A47-1Meg-Z	Q13-137	U53	Treble
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	Attach to R3A
R4	50Ω	2	RV421115					Hum Balance - wire wound

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Harman-Kardon PART No.	IRC PART No.	
R5	47K			BTS-47K	
R6	1Meg			BTS-1Meg	
R7	270K			BTS-270K	
R8	330Ω			BTS-330	
R9	68K			BTS-68K	
R10	68K			BTS-68K	
R11	100K			BTS-100K	
R12	68K			BTS-68K	
R13	1Meg			BTS-1Meg	
R14	1500Ω			BTS-1500	
R15	3300Ω			BTS-3300	
R16	220K			BTS-220K	
R17	33K			BTS-33K	
R18	100K			BTS-100K	
R19	10K			BTS-10K	
R20	22K			BTS-22K	
R21	68K			BTS-68K	
R22	22K			BTS-22K	
R23	27K			BTS-27K	
R24	47K			BTS-47K	
R25	100K			BTS-100K	
R26	270K			BTS-270K	
R27	100K			BTS-100K	
R28	47K			BTS-47K	
R29	27K			BTS-27K	
R30	12K			BTS-12K	
R31	100K			BTS-100K	
R32	1000Ω 5%			BTS-1000 5%	Note 1
R33	470K			BTS-470K	Note 2
R34	47K			BTS-47K	
R35	470Ω			BTS-470	Note 2
R36	47K			BTS-47K	
R37	470K			BTS-470K	
R38	2200Ω			BTS-2200	Note 3
R39	470K			BTS-470K	
R40	47K			BTS-47K	
R41	47K			BTS-47K	
R42	10K			BTS-10K	
R43	100K			BTS-100K	
R44	100K			BTS-100K	
R45	270Ω	3		BTB-270	
R46	68Ω			BTS-68	
R47	68K			BTS-68K	Note 4
R48	15Ω			BTS-15	

Note 1. Some versions use 820Ω in this application.
Note 2. Not used in some versions.
Note 3. Some versions use 560Ω in this application.
Note 4. Some versions use 82K in this application.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	Harman-Kardon PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @ .585A	640VCT @ .078A	5VAC @ 2A	6.3VAC @ 2A	FT-25733		P-2951①			

① Tape 6.3 volts CT.

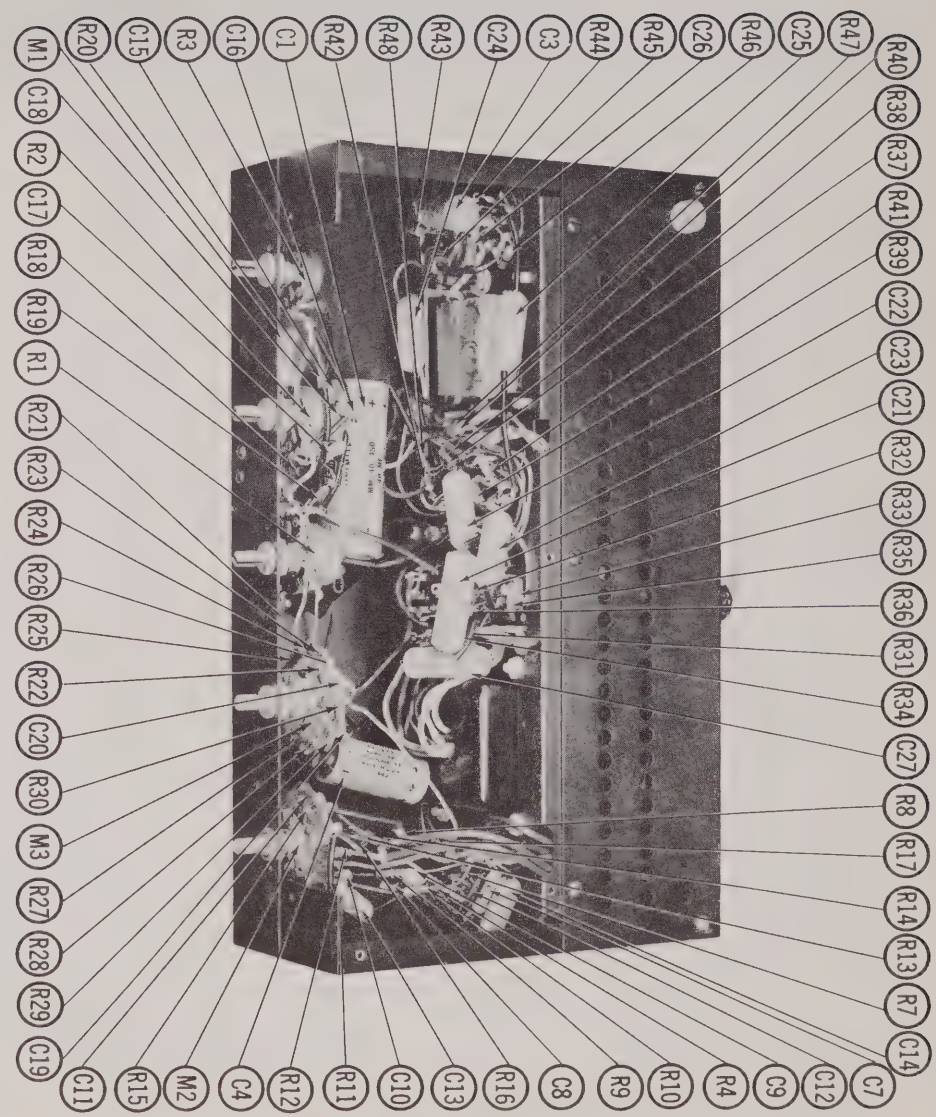
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	Harman-Kardon PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	8300Ω screen tap @ 150Ω	16Ω tap @ 8Ω	FT-25734				22S65		

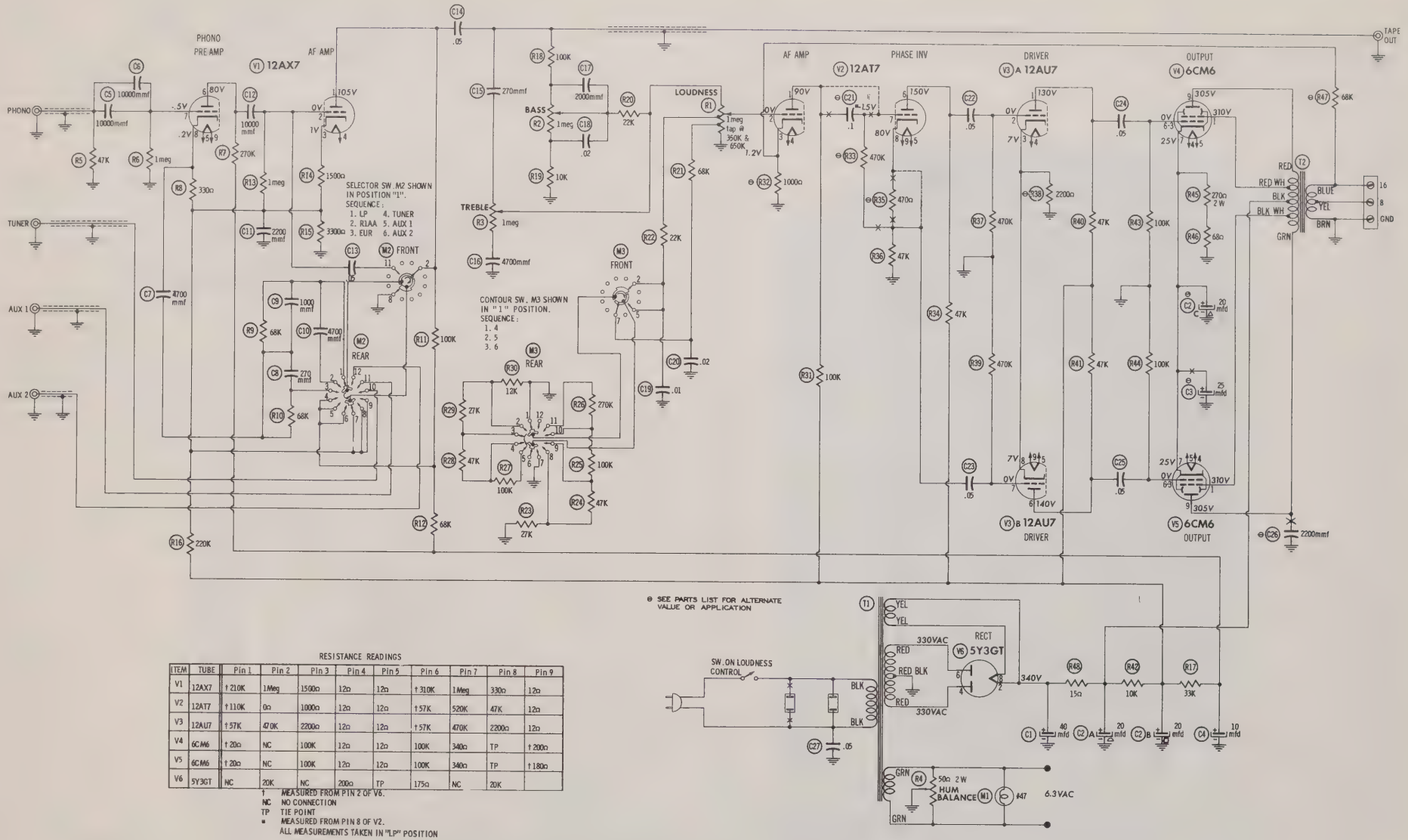
MISCELLANEOUS

ITEM No.	PART NAME	Harman-Kardon PART No.	NOTES
M1	Pilot Light		#47
M2	Switch	ER25792	Selector & phono compensation (Rotary, wafer type)
M3	Switch	ER25792	Contour (Rotary, wafer type)
	Knob	P25790	With Shank
	Knob	P20778	Without Shank

CHASSIS—BOTTOM VIEW



HARMAN-KARDON MODEL C100



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†210K	1Meg	1500Ω	12Ω	12Ω	†310K	1Meg	330Ω	12Ω
V2	12AT7	†110K	0Ω	1000Ω	12Ω	12Ω	†57K	520K	47K	12Ω
V3	12AU7	†57K	470K	2200Ω	12Ω	12Ω	†57K	470K	2200Ω	12Ω
V4	6CM6	†20Ω	NC	100K	12Ω	12Ω	100K	340Ω	TP	†200Ω
V5	6CM6	†20Ω	NC	100K	12Ω	12Ω	100K	340Ω	TP	†180Ω
V6	5Y3GT	NC	20K	NC	200Ω	TP	175Ω	NC	20K	

† MEASURED FROM PIN 2 OF V6.
NC NO CONNECTION
TP TIE POINT
▪ MEASURED FROM PIN 8 OF V2.
ALL MEASUREMENTS TAKEN IN "LP" POSITION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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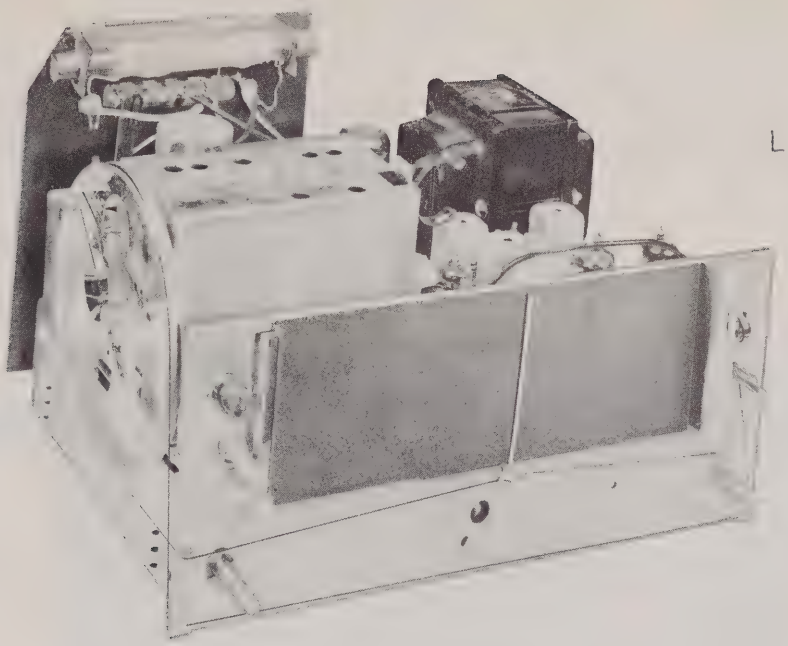

PROPERTY OF
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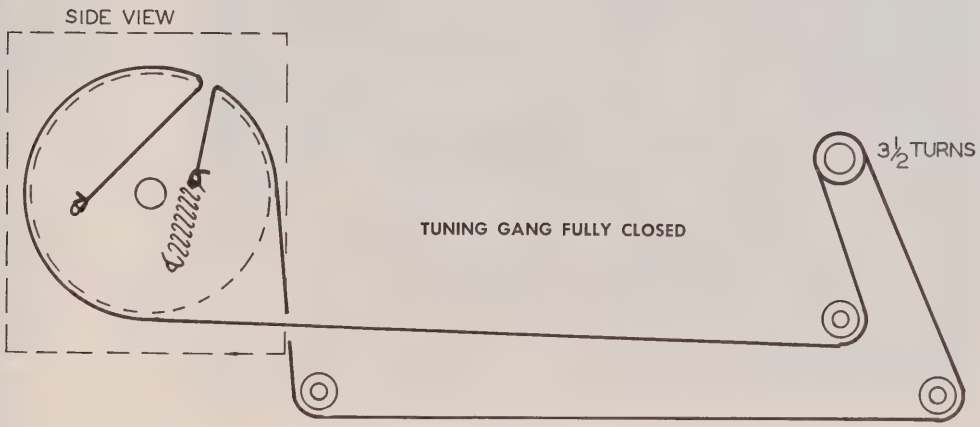
3924 MEADE ST.
DENVER, COLORADO

MAGNAVOX
CHASSIS CR724

TRADE NAME	Magnavox Chassis CR724		
MANUFACTURER	Magnavox Co., 2131 Bueter Rd., Fort Wayne, Ind.		
TYPE SET	AC Operated FM-AM Superheterodyne Receiver		
TUBES	Ten		
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING .75 Amp. @ 117 Volts AC	
TUNING RANGE-BROADCAST	540KC - 1620KC	FREQ. MOD. 88MC-108MC	

MAGNAVOX
CHASSIS CR724



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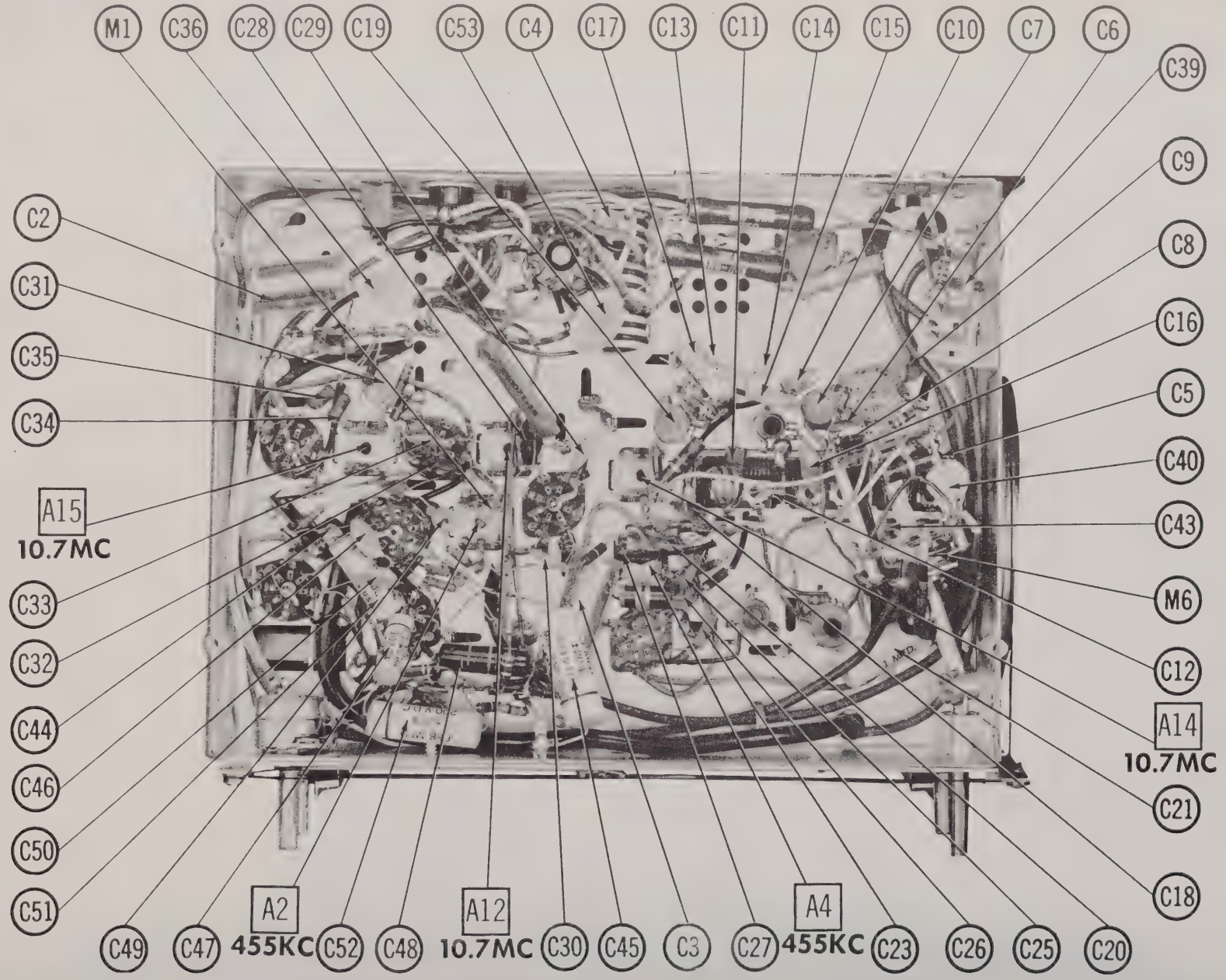
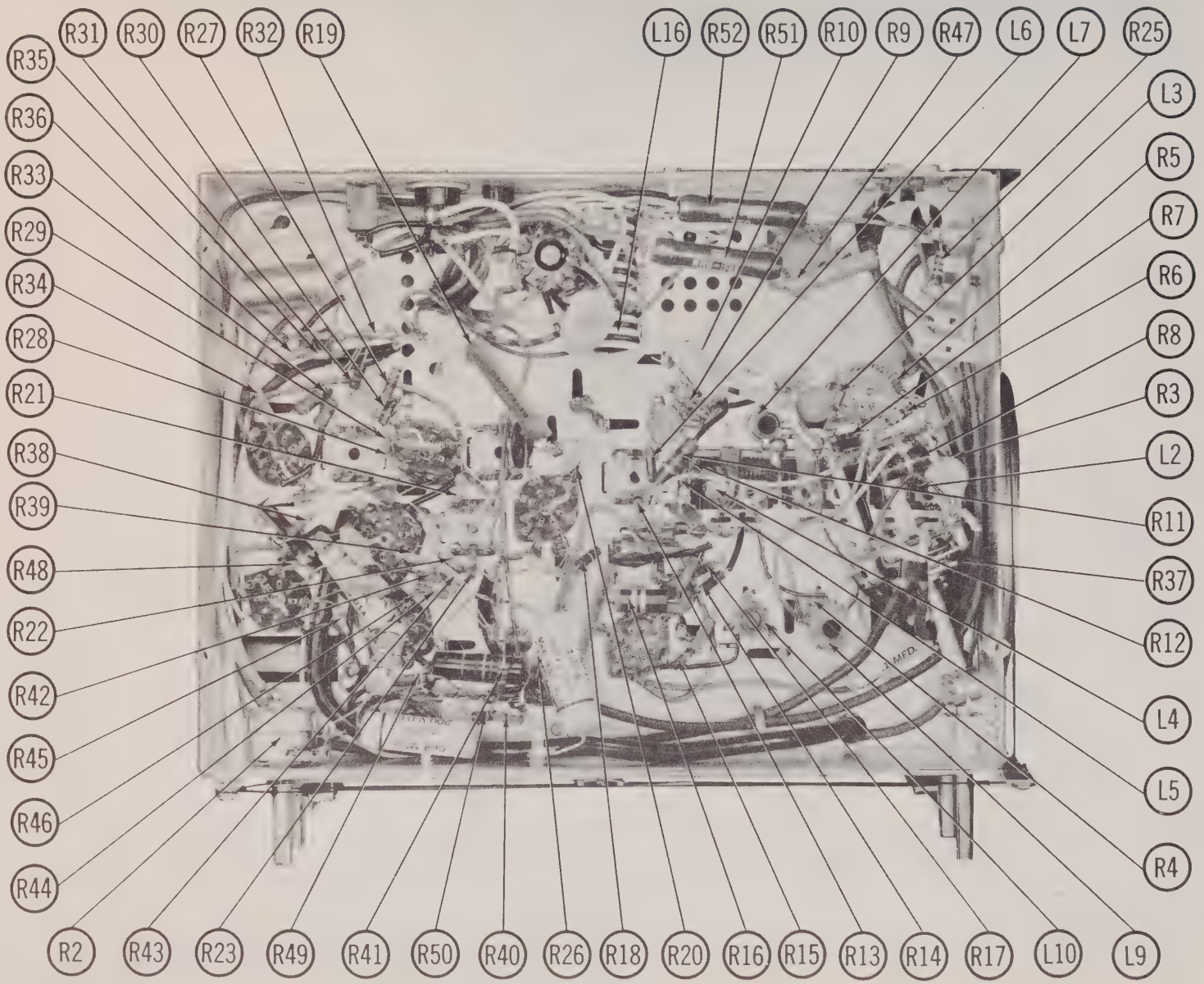
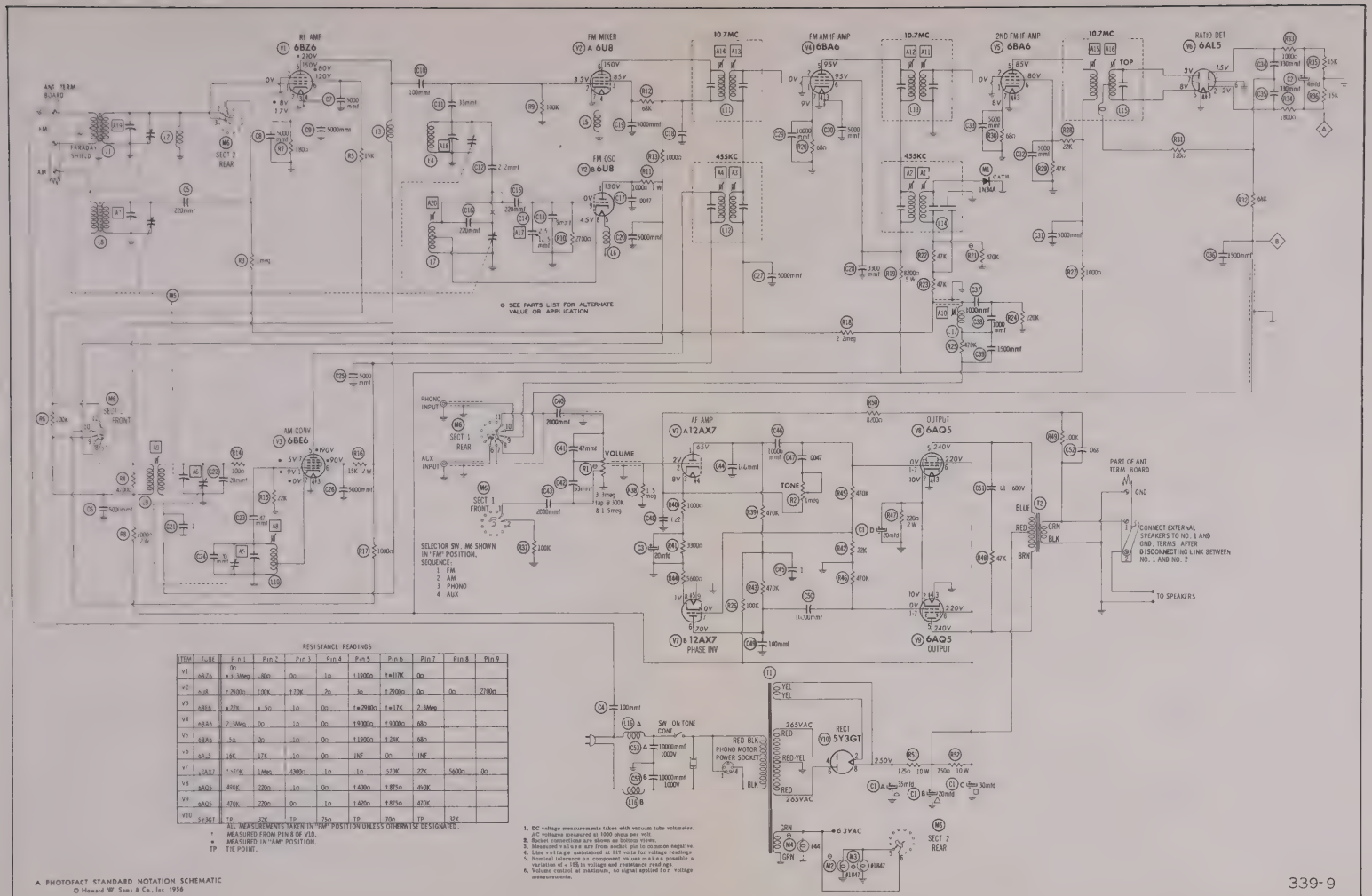


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

MAGNAVOX
CHASSIS CR724



RESISTANCE READINGS

ITEM	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
		Ohms								
V1	6BZ6	* 3.3Meg	68Ω	0Ω	1Ω	1.12KΩ	1=117K	0Ω		
V2	6U8	* 2900Ω	100K	170K	2Ω	3Ω	1.2900Ω	0Ω	0Ω	2700Ω
V3	6BE6	* 22K	* 5Ω	1Ω	0Ω	1=2900Ω	1=17K	2.3Meg		
V4	6BA6	2.3Meg	0Ω	1Ω	0Ω	1.9000Ω	1.9000Ω	68Ω		
V5	6BA6	5Ω	3Ω	1Ω	0Ω	1.1900Ω	1.24K	68Ω		
V6	6AL5	16K	17K	1Ω	0Ω	INF	0Ω	INF		
V7	12AX7	470K	1Meg	6300Ω	1Ω	1Ω	570K	22K	5600Ω	0Ω
V8	6AQ5	490K	220Ω	1Ω	0Ω	1.400Ω	1.875Ω	490K		
V9	6AQ5	470K	220Ω	0Ω	1Ω	1.420Ω	1.875Ω	470K		
V10	5Y3GT	TP	52K	TP	75Ω	TP	70Ω	TP	32K	

ALL MEASUREMENTS TAKEN IN "AM" POSITION UNLESS OTHERWISE DESIGNATED.
* MEASURED FROM PIN 8 OF V1B.
• MEASURED IN "AM" POSITION.
TP TIE POINT.

1. DC voltage measurements taken with vacuum tube voltmeter. AC voltages measured at 1000 ohms per volt.
2. Broken connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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339-9

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (grid) of 6BE6 (V3). Low side to chassis.	455KC (400∿ Mod)	AM	1000KC	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	10MMF	High side to AM antenna terminal. Low side to chassis.	1400KC	"	1400KC	"	A5, A6, A7	"
3.	"	"	600KC	"	600KC	"	A8, A9	"

10KC FILTER ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
4.	.01MFD	High side to pin 7 of 6BE6 (V3). Low side to chassis.	455KC (10KC Mod)	AM		Across voice coil	A10	Adjust for MINIMUM output.

FM IF & RF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	.01MFD	High side to pin 2 (grid) of 6U8 (V2). Low side to chassis.	10.7MC (Unmod)	FM	Low freq. end of dial	DC probe thru 1Meg to point ⟨A⟩. Common to chassis.	A11, A12, A13, A14, A15,	Adjust for maximum deflection.
6.	"	"	"	"	"	DC probe thru 1Meg to point ⟨B⟩. Common to chassis.	A16	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Repeat steps 5 and 6.
7.	120Ω and 150Ω Carbon Resistors	To FM antenna terminals with 120Ω in high side and 150Ω in low side.	107MC	"	107MC	DC probe thru 1Meg to point ⟨A⟩. Common to chassis.	A17, A18, A19	Adjust for maximum deflection.
8.	"	"	89MC	"	89MC	"	A20	Adjust for maximum deflection. Repeat steps 7 and 8.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	.01MFD	High side to pin 2 (grid) of 6U8 (V2). Low side to chassis.	10.7MC (300KC Swp)	FM	Low freq. end of dial	Vert. Amp. thru 1Meg to point ⟨A⟩. Low side to chassis.	A11, A12, A13, A14, A15	Disconnect stabilizing capacitor C2. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
6.	"	"	"	"	"	Vert. Amp. thru 1Meg to point ⟨B⟩. Low side to chassis.	A16	Reconnect stabilizing capacitor C2. Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A15 for maximum amplitude and straightness of cross-over lines.

FIG. 1

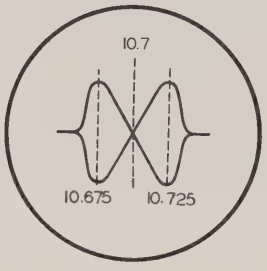


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	6BZ6	
V2	FM Mixer-Oscillator	6U8	
V3	AM Converter	6BE6	
V4	1st. IF Amplifier	6BA6	
V5	2nd. FM IF Amplifier	6BA6	

ITEM No.	USE	TYPE	NOTES
V6	Ratio Detector	6AL5	
V7	AF Amp.-Phase Inv.	12AX7	
V8	Output	6AQ5	
V9	Output	6AQ5	
V10	Rectifier	5Y3GT	

ELECTROLYTIC CAPACITORS

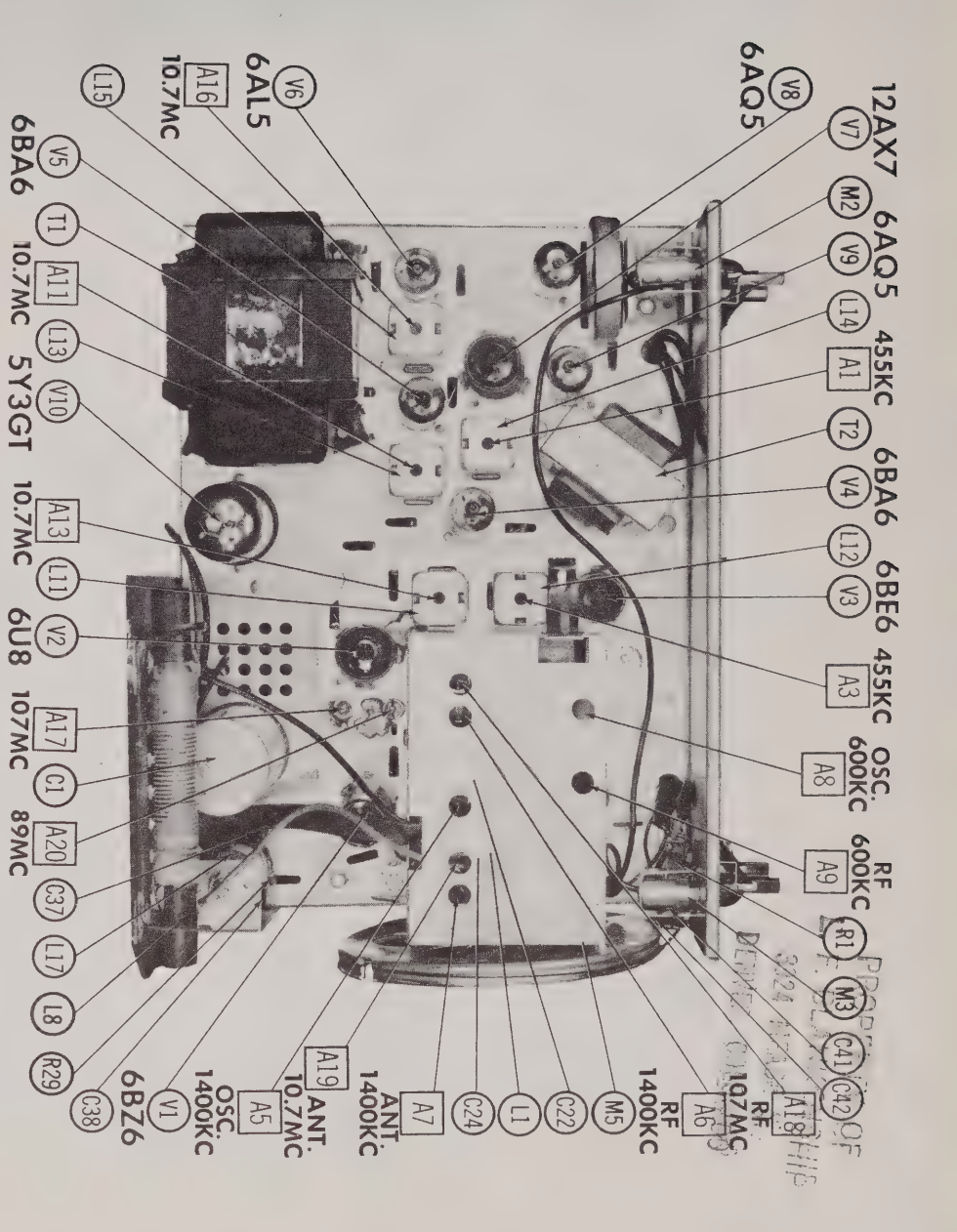
ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MAGNAVOX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲35	450	270021-59	AFH4-76	DO82	FP430.2	TMQ-90	Q-370	TVL-4732
B	▲20	450							
C	■30	450							
D	20	25							
C2	4	50	270027-27	SRE50V5	BR550	TC30	TD-4-50	MMT-0550	TVA-1303
C3	20	25	270027-2	PRS25V25	BR202	TC26	TD-25-25	FM-0225	TVA-1205

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MAGNAVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	100	500	250187-69	BPD-0001	D6-101	5W5T1	801-101	MC235	1FM-31	
C5	220	500	250187-57	NP0-SI220	D6-221	22R5T22	811-221		MS-322	
C6	5000		250175-1	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C7	5000		250175-1	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C8	5000		250175-1	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C9	5000		250175-1	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C10	100	500	250187-53	NP0-SI100	D6-101	22R5T1	801-101	MCB235	MS-31	
C11	33	500	250187-47	NP0-SI33	D6-330	22R5Q33	NP0K-330	ZT-5433	MS-433	
C12	2.2		250221-118	NP0-SI2.2	TCZ-2R2	TZ05	NP0A-2R2		5TCCB-V22	
C13	5		250088-138							
C14	2.5-12.5		250188-9							
C15	220	500	250159-55	1469-00022		22R5T22	NP0-335-221		MS-322	
C16	220	500	250159-55	1469-00022		22R5T22	NP0-335-221		MS-322	
C17	.0047	400	250211-5	BPD-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C18	5000		250175-1	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C19	5000		250175-1	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C20	5000		250175-1	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C21	.1	200	250202-13	P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C22	20	500	250187-5	NP0-SI20	TCZ-20	22R5Q20	NP0K-200	ZT-542	MS-42	
C23	47	500	250187-49	NP0-SI47	TCZ-47	22R5Q47	NP0-338-470	ZT-5447	MS-447	
C24	20	500	250187-5	NP0-SI20	TCZ-20	22R5Q2	NP0K-200	ZT-542	MS-42	
C25	5000		250175-1	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C26	5000		250175-1	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C27	5000		250175-1	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C28	3300		250175-28	BPD-0033	D6-332	K077	811-0033	UC-5233	5HK-D33	
C29	10000		250218-19	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C30	5000		250175-1	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C31	5000		250175-1	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C32	5000		250175-1	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C33	5000		250175-1	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C34	330		250207-49	SI330	D6-331	TP43	GP2-331	UC-5333	5GA-T33	
C35	330		250207-49	SI330	D6-331	TP43	GP2-331	UC-5333	5GA-T33	
C36	1500			DI-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C37	1000		250288-354	1464-001		1R5D1		MCE255	MS-21	
C38	1000		250288-354	1464-001		1R5D1		MCE255	MS-21	
C39	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C40	2000		250218-20	BPD-002	DD-202	K072	801-002	DC-522	5HK-D2	
C41	47.			N750-DI47	TCN-47	N033	N750K-470	NT-5447	5TCU-Q47	
C42	33		250218-21	N750-DI33	TCN-33	N029	N750K-330		5TCU-Q33	
C43	2000		250218-20	BPD-002	DD-202	K072	801-002	DC-522	5HK-D2	
C44	100		250218-22	BPD-0001	DD-101	G042	801-101	UC-531	5GA-T1	
C45	.1	400	250211-13	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	
C46	10000		250218-19	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C47	.0047	400	250211-5	BPD-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C48	.022	200	250202-9	BPD-02	DF-203	CUB4S22	817-02	PT4122	2TM-S22	
C49	100		250218-22	BPD-0001	DD-101	G042	801-101	UC-531	5GA-T1	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Magnavox PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C50	10000		250218-19	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C51	.01	600	250201-7	BPD-01	D6-103	CUB6S1	GP3-333-103	PT611	6TM-S1	
C52	.068	200	250202-12	P288N-068		CUB4S68			2TM-S68	
C53A	10000	1000	250219-3	P1088N-01		CUB16S1		PT161l	10TM-S1	
B	10000	1000		P1088N-01		CUB16S1		PT161l	10TM-S1	

CONTROLS

ITEM No.	RATING RESIST-ANCE	RATING WATTS	REPLACEMENT DATA Magnavox PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	3.3Meg	½	D220131G3					Volume-tapped ⓐ300K & 1.5Meg - Note 1
R1A	3.3Meg	½	220074-10	ABT-8517	A47F-3Meg		UT-461	Volume
B	Shaft		Not Req.	AK-3	FS-3		Not Req.	Attach to R1A
R2A	1Meg	½	220073-20	AB-70	A47-1Meg-Z	Q13-137	U53	Tone
B	Shaft		Not Req.	AK-3	FS-3	Not Req.	Not Req.	Attach to R2A
C	Switch		Not Req.	KB-1	SWE-12	76-1	US-26	Attach to R2A

Note 1. Some versions will use an alternate control part #220074-10 in this application.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA MAGNAVOX PART No.	IRC PART No.	NOTES
R3	1Meg		230104-98	BTS-1Meg	
R4	4700Ω		230104-70	BTS-4700	
R5	15K		230104-76	BTS-15K	
R6	100K		230104-86	BTS-100K	
R7	180Ω		230104-53	BTS-180	
R8	1000Ω	2	230096-62	BTB-1000	
R9	100K		230104-86	BTS-100K	
R10	2700Ω		230104-67	BTS-2700	
R11	1000Ω	1	230105-62	BTA-1000	
R12	68K		230104-84	BTS-68K	
R13	1000Ω		230104-62	BTS-1000	
R14	100Ω		230104-50	BTS-100	
R15	22K		230104-78	BTS-22K	
R16	15K	2	230106-76	BTB-15K	
R17	1000Ω		230104-62	BTS-1000	
R18	2.2Meg		230104-102	BTS-2.2Meg	
R19	8200Ω	5	240071-13	PW7-8200	
R20	68Ω		230104-48	BTS-68	
R21	470K		230104-94	BTS-470K	Note 1
R22	47K		230104-82	BTS-47K	
R23	47K		230104-82	BTS-47K	
R24	220K		230104-90	BTS-220K	
R25	470K		230104-94	BTS-470K	
R26	100K		230104-86	BTS-100K	
R27	1000Ω		230104-62	BTS-1000	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA MAGNAVOX PART No.	IRC PART No.	NOTES
R28	22K		230104-78	BTS-22K	
R29	47K		230104-82	BTS-47K	
R30	68Ω		230104-48	BTS-68	
R31	120Ω		230104-51	BTS-120	
R32	68K		230104-84	BTS-68K	
R33	1000Ω		230104-62	BTS-1000	
R34	1800Ω		230104-65	BTS-1800	
R35	15K		230104-76	BTS-15K	
R36	15K		230104-76	BTS-15K	
R37	100K		230104-86	BTS-100K	
R38	1.5Meg		230104-100	BTS-1.5Meg	
R39	470K		230104-94	BTS-470K	
R40	1000Ω		230104-62	BTS-1000	
R41	3300Ω		230104-68	BTS-3300	
R42	22K		230104-78	BTS-22K	
R43	470K		230104-94	BTS-470K	
R44	5600Ω		230104-71	BTS-5600	
R45	470K		230104-94	BTS-470K	
R46	470K		230104-94	BTS-470K	
R47	220Ω	2	230106-54	BTB-220	
R48	47K		230104-82	BTS-47K	
R49	100K		230104-86	BTS-100K	
R50	8200Ω		230104-73	BTS-8200	
R51	125Ω	10	240021-11	1 3/4A-125	
R52	750Ω	10	240021-46	1 3/4A-750	

Note 1. Some versions use 220K in this application (part #230104-90).

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC ⓐ .75A	545VCT ⓐ .112A	5VAC ⓐ 2A	6.3VAC ⓐ 3.4A	300081-2					

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	10.4K	3-4Ω	330037-3	Z1404	A-2936	A-3823	26S46	S-53X	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA MAGNAVOX PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	FM Ant. Trans	.1ΩCT	0Ω	360491-2				
L2	FM Ant. Coil	0Ω		360629-1				
L3	RF Choke	.2Ω		360522-9	19-1002		4606	2 Microhenries
L4	FM RF Coil	0Ω		360629-1				
L5	Fil. Choke	.2Ω		360522-9	19-1002		4606	2 Microhenries
L6	Fil. Choke	.2Ω		360522-9	19-1002		4606	2 Microhenries
L7	FM Osc. Coil	0Ω		360628-1				Tapped
L8	AM Loop Stick	.1Ω		460894-1				
L9	AM RF Coil	23Ω	3.4Ω	360348-2			A-5495-RF *	* Enlarge mtg. hole
L10	AM Osc. Coil	5.3Ω		360407-2	14-1033			Tapped ⓐ.5Ω
L11	1st. FM IF	.7Ω	.7Ω	360626-1	16-3487	FM-254	1463	
L12	1st. AM IF	17Ω	17Ω	360611-1	16-6758	BC-352	12-C1	
L13	2nd. FM IF	.7Ω	.7Ω	360626-1	16-3487	FM-254	1463	
L14	2nd. AM IF	23Ω	23Ω	360625-1	16-6770	BC-355	12-C6	
L15	Ratio Det.	4.6Ω	1.6ΩCT	360627-1	17-3498	FM-255	1465	Tertiary winding-.5Ω
L16A	Line Choke	0Ω		360635-1				
B	Line Choke	0Ω						
L17	10KC Filter	480Ω		360621-1				

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA MAGNAVOX PART No.	REPLACEMENT DATA SYLVANIA PART No.	NOTES
M1	1N34A	530030-2	1N34A	AM audio Det. (Pigtail

MISCELLANEOUS

ITEM No.	PART NAME	MAGNAVOX PART No.	NOTES
M2	Dial Light	180161-17	#1847 . Some versions may use #44 lamp
M3	Dial Light	180161-17	#1847. Some versions may use #44 Lamp
M4	Pilot Light	180161-6	#44. Not used in some versions
M5	Tuning Cap.	260133-1	6 Gang (AM Sections: 19-535MMF, 19-535MMF, 15-185MMF)
M6	Switch	160255-1	Selector (Rotary, wafer type)
	Dial Glass	150419-1	
	Dial Pointer	102448-2	

PROPERTY OF
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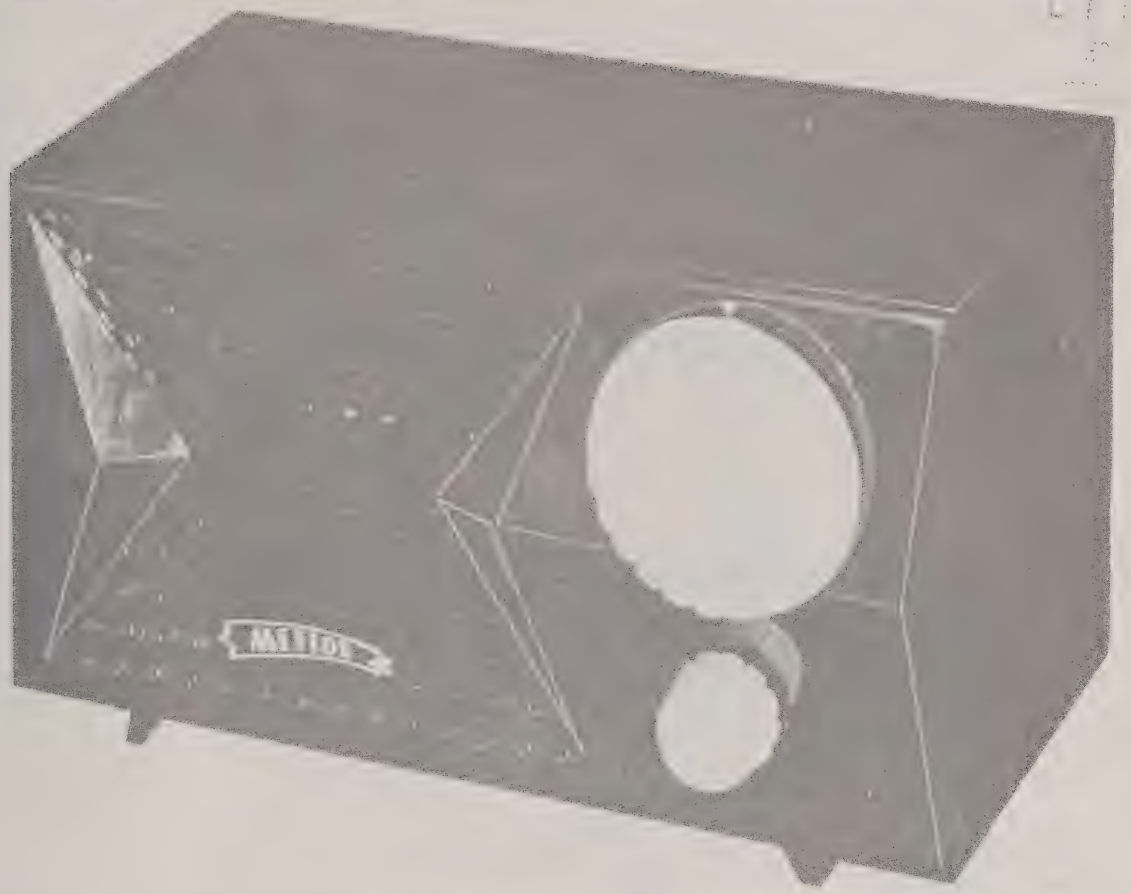
METEOR MODEL
7001 (Ch. 132.39400)



METEOR MODEL
7001 (Ch. 132.39400)

TRADE NAME	Meteor Model 7001 (Ch. 132.39400)
SUPPLIER	Sears Roebuck & Co., 925 S. Homan, Chicago, Illinois
TYPE SET	AC-DC Operated AM Superheterodyne Receiver
TUBES (Four)	Types 12BE6 Converter, 12AV6 Det. -AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC — RATING .26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	110-120 Volts AC-DC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to ant. lug on tuning gang. Low side to B-.	455KC (400~ mod.)	Tuning gang fully open.	Across voice coil.	A1, A2	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620KC	"	"	A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal.	"	A4	"
4.		"	600KC	Tune to 600KC signal.	"	A5	Adjust for maximum output while rocking tuning gang.

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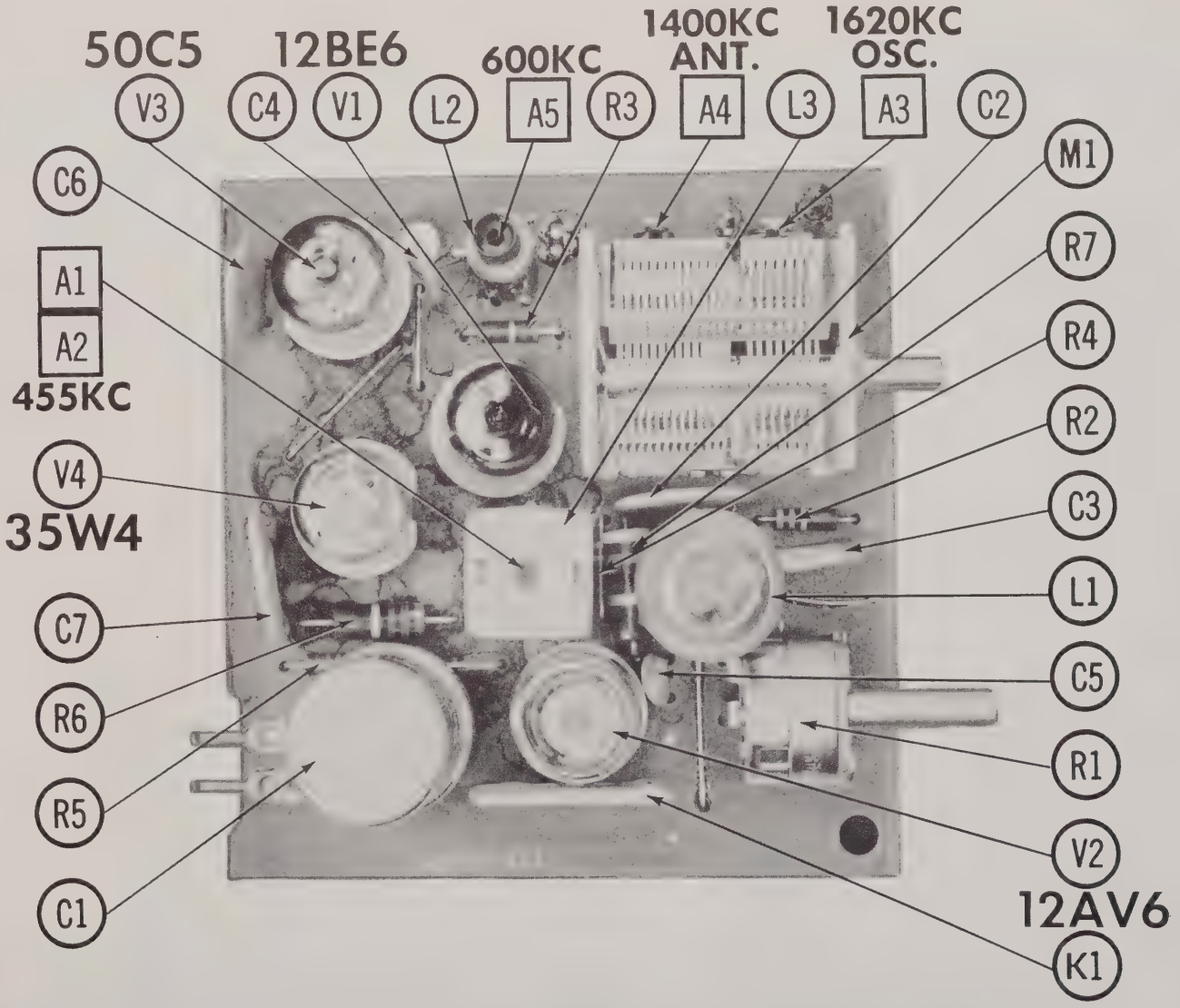


CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	Det. AVC-AF Amplifier	12AV6	
V3	Output	50C5	
V4	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	METEOR PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■40	150	43711-2	AFH3-72	XC007	FP306	TMT-57	T-260	TVL-3422
B	▲20	150							
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	METEOR PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	20000		43674-2	BPD-02	DD-203	K085	817-02		5HK-S2	
C3	20000		43674-2	BPD-02	DD-203	K085	817-02		5HK-S2	
C4	47									Note #1
C5	100		43957-1	BPD-0001	DD-101	G042	801-101	UC-531	5GA-T1	
C6	10000		43674-1	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C7	20000		43674-2	BPD-02	DD-203	K085	817-02		5HK-S2	

Note #1. Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	METEOR PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	1 Meg	½	C43613				TA-16A	Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	METEOR PART No.	IRC PART No.	
R2	330K		43687-334	BTS-330K	
R3	22K		43687-223	BTS-22K	
R4	3.3Meg		43687-335	BTS-3.3Meg	
R5	120Ω		43689-121	BTS-120	
R6	2200Ω	1	43688-222	BTA-2200	
R7	47Ω	2	42235		

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	METEOR PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2400Ω	3-4Ω	Part of Spkr. C43096	Z1101	A-3025	A-3332	26S58①	S-12X	① Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	METEOR PART No.	QUAM PART No.	RCA TYPE No.	
SP1	4"	PM	3-4Ω	C43096	4A07	223S1	

COILS (RF-IF)

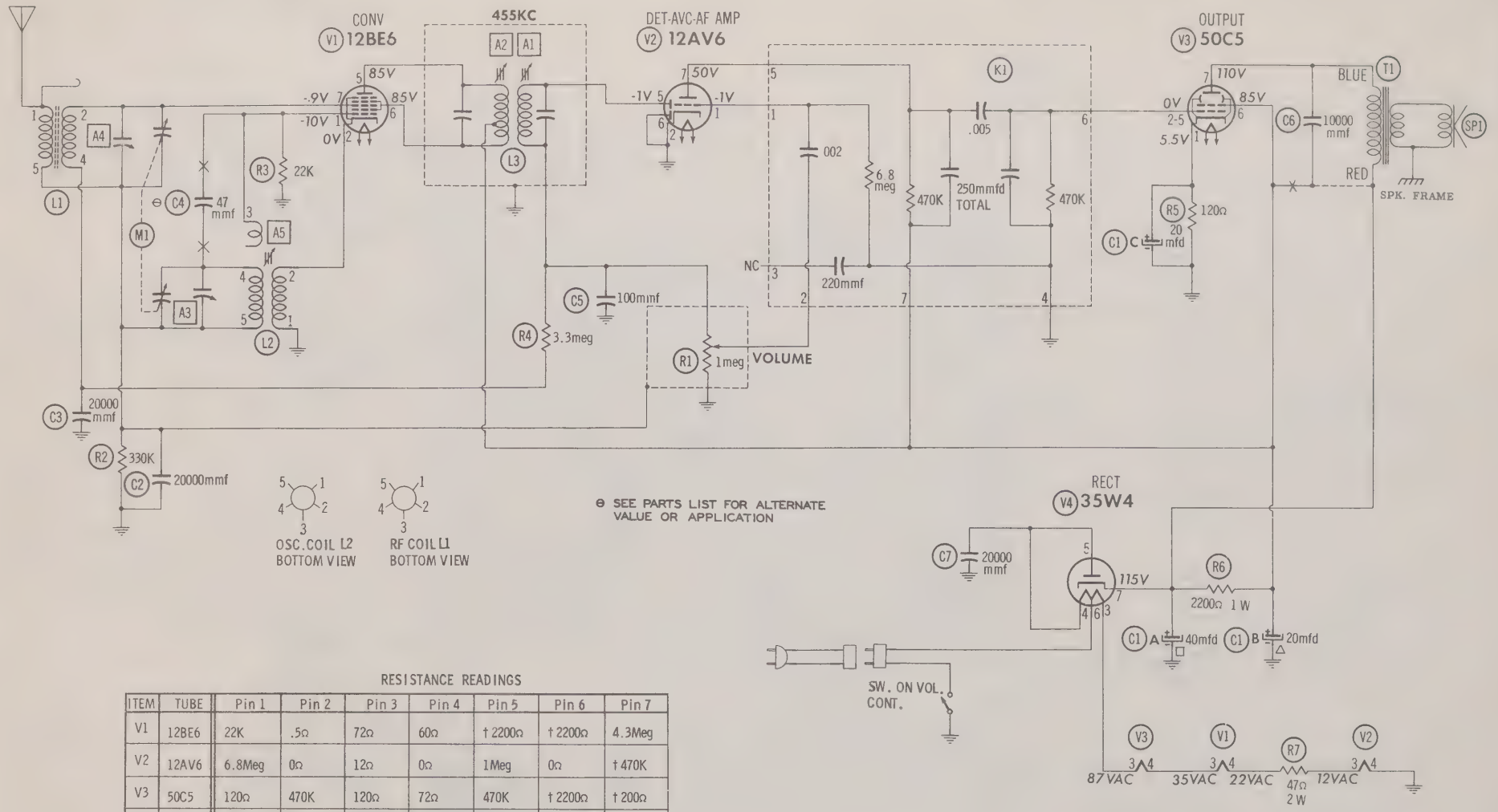
ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	METEOR PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	34Ω	2.8Ω	43643-1				
L2	Osc. Coil	.5Ω	5.3Ω	43644-1				
L3	IF Trans.	26Ω *	26Ω	43622				* Tapped ⓐ 2.5Ω

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	METEOR PART No.	REPLACEMENT DATA
K1	Audio Couplate	5000MMF, 2000MMF, 250MMF, 6.8Meg, 470K, 470K.	43743-1	Aerovox PA-458 C-R-L PCT-158 Sprague DT-5

MISCELLANEOUS

ITEM No.	PART NAME	METEOR PART No.	NOTES
M1	Tuning Cap.	43614	2 Gang
	Printed Circuit	43743-1	
	Cabinet	43642-1	
	Knob	43626	Tuning
	Knob	43625	Volume



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.5Ω	72Ω	60Ω	† 2200Ω	† 2200Ω	4.3Meg
V2	12AV6	6.8Meg	0Ω	12Ω	0Ω	1Meg	0Ω	† 470K
V3	50C5	120Ω	470K	120Ω	72Ω	470K	† 2200Ω	† 200Ω
V4	35W4	NC	NC	120Ω	155Ω	155Ω	145Ω	18K

† MEASURED FROM PIN 7 OF V4.
NC NO CONNECTION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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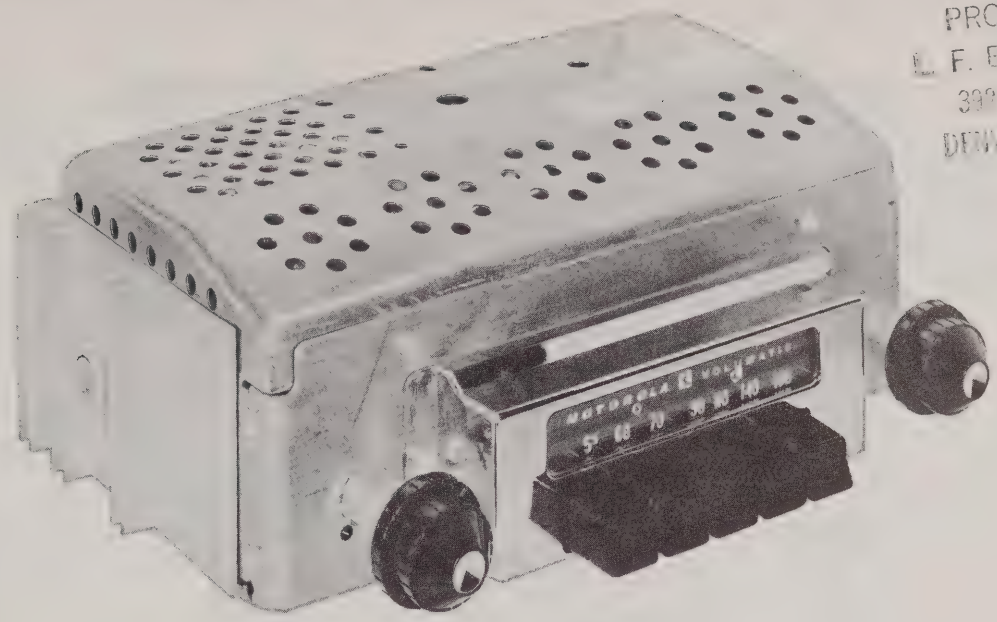

MOTOROLA
MODEL CTA6T

TRADE NAME	Motorola Model CTA6T (For 1955 and 1956 Chevrolet Automobiles)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Ill.
TYPE SET	Battery Operated Custom Built AM Superheterodyne Automobile Receiver With Transistor Output
TUBES (Five)	Types 12AC6 RF Amplifier, 12AD6 Converter, 12AC6 IF Amplifier, 12F8 Det-AVC-1st AF Amp., 12K5 2nd AF Amplifier
POWER SUPPLY	12 Volt Storage Battery — RATING 1.8 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540KC - 1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	455KC (400~ Mod)	High frequency end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Fig. 1	Thru dummy to antenna receptacle.	1610KC	"	"	A5, A6, A7	"
3.	"	"	"	"	"	"	Back A8, A9 and A10 (tuning cores) out of coils but not out of coil forms. Adjust A5, A6 and A7 for maximum output.
4.	"	"	1200KC	Adjust 9/32" from high frequency end stop.	"	A8, A9, A10	Adjust for maximum output.
5.	"	"	1610KC	High frequency end stop.	"	A5, A6, A7	Retouch for maximum output.
6.	With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum volume.						

PUSHBUTTON ADJUSTMENT

Pull out pushbutton to be set. Tune manually to desired station. Press pushbutton in firmly. Repeat on remaining pushbuttons.

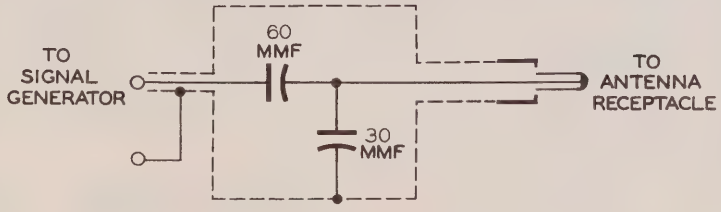

FIG. 1

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PARTS LIST AND DESCRIPTIONS

MOTOROLA MODEL CTA6T

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12AC6	
V2	Converter	12AD6	
V3	IF Amplifier	12AC6	
V4	Det. -AVC-1st AF Amp.	12F8	
V5	2nd AF Amplifier	12K5	

TRANSISTORS

ITEM No.	USE	TYPE	NOTES
X1	Output	2N178	Note 1

Note 1: 2NJ4/2N176 may be used in some models.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA MOTOROLA PART No..	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲100	16	23B536733	AFH2-02-10		WP200. 5		S-035	R2299*
B	■500	16						MTH-2550	
C2	200	3	23A537548	PRS6V250	BRH6025	TC1502	TD-250-6	MTH-0625	TVA-1102

* Non catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

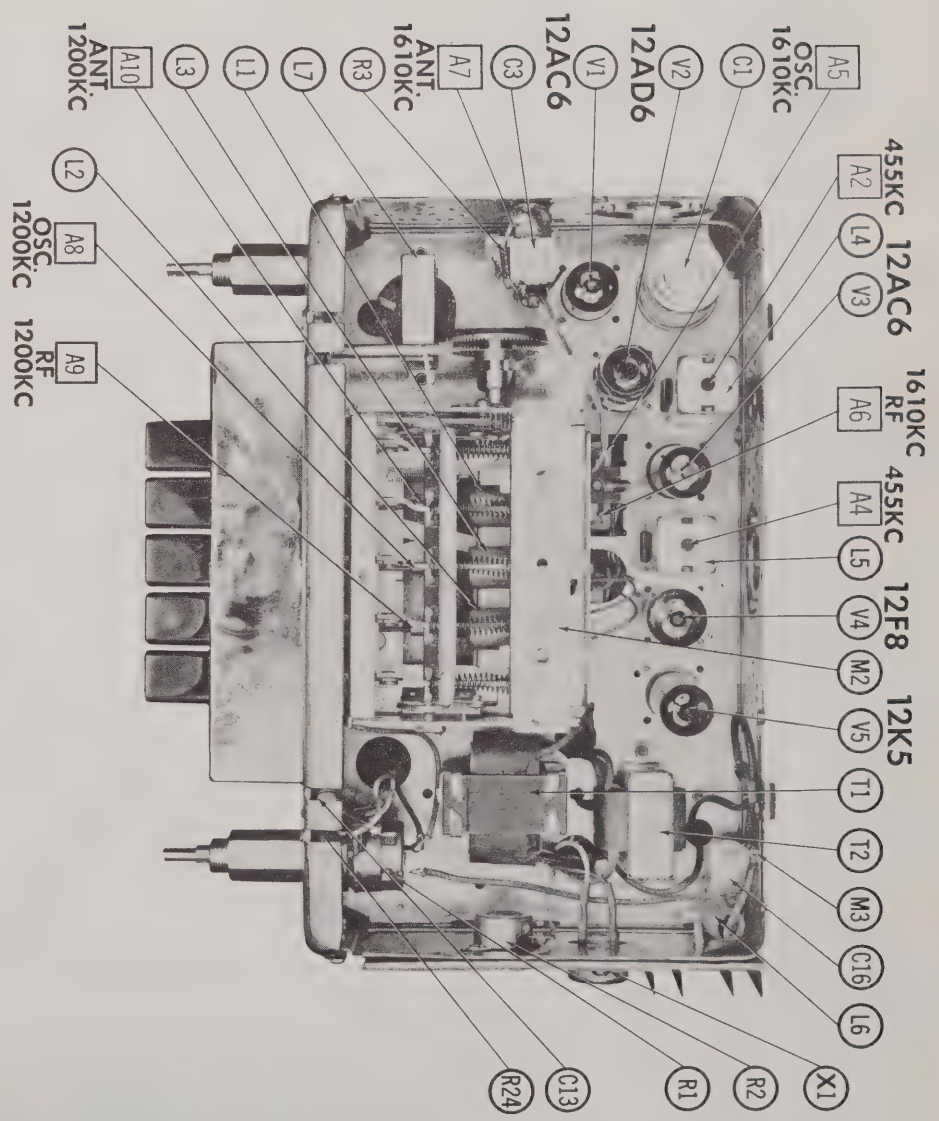
ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	90		21A591682							
C4	22		21R120552	NP0-SI22	TCZ-22	TZ14	NP0K-220	ZT-542	5TCC-Q22	
C5	.05	200	8R121005	BPD-05	DF-503	CUB2S5		PT415	2TM-S5	
C6	400		21A71872							
C7	.05	200	8R121005	BPD-05	DF-503	CUB2S5		PT415	2TM-S5	
C8	27		21R120567	N750-SI27	TCN-27	TN08	N750K-270		5TCU-Q25	
C9	.01	200	8R121868	BPD-01	D6-103	CUB4S1	GP3-333-103	PT411	4TM-S1	
C10	.01	200	8R121868	BPD-01	D6-103	CUB4S1	GP3-333-103	PT411	4TM-S1	
C11	.05	200	8R121005	BPD-05	DF-503	CUB2S5		PT415	2TM-S5	
C12	.002	600	8R121568	BPD-002	D6-202	CUB6D2	GP2-333-202	PT622	6TM-D2	
C13	.01	200	8R121868	BPD-01	D6-103	CUB4S1	GP3-333-103	PT411	4TM-S1	
C14	.1	200	8R121573	P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C15	.05	200	8R121005	BPD-05	DF-503	CUB2S5		PT415	2TM-S5	
C16	.5	100	8K122076	VHC36		ST2P5		RF480	68P20	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	18B536819	F1-52	RTV-594C	QJ-1027A♦	UF16A	Tone (Panel)
B	1Meg	½		R2-56			UR16T35	Volume, tap ⓐ 500K (Rear)
C	Switch			KB-4			US-26	Attach to R1A
R2	500Ω	2	18K537172		39-500-100		FL-600S	Emitter Bias 200Ω Stop (Wire-wound)

♦Concentrikit equivalent: Kit K-6, base elements & shafts, B13-137 & P13-118 (Panel)
B19-137 & R1-130 (Rear)
76-1 (Switch)

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R3	1.5Meg		6R3966	BTS-1.5Meg	
R4	1500Ω		6R6038	BTS-1500	
R5	180K		6R6444	BTS-180K	
R6	82K		6R5644	BTS-82K	
R7	47K		6R6056	BTS-47K	
R8	560Ω		6R6291	BTS-560	
R9	4.7Meg		6R6446	BTS-4.7Meg	
R10	2.2Meg		6R6433	BTS-2.2Meg	
R11	3.3Meg		6R2118	BTS-3.3Meg	
R12	91Meg		6K538716		
R13	4.7Meg		6R6446	BTS-4.7Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R14	5.6Meg		6R3988	BTS-5.6Meg	
R15	3.3Meg		6R2118	BTS-3.3Meg	
R16	120K		6R5631	BTS-120K	
R17	10K		6R6320	BTS-10K	
R18	220K		6R6407	BTS-220K	
R19	56Ω		6R5614	BTS-56	
R20	2.2Meg		6R3927	BTS-2.2Meg	
R21	10Ω		6R5621	BTS-10	
R22	27Ω		6R5683	BTS-27	
R23	82Ω		6R2035	BTS-82	
R24	100K		6R6075	BTS-100K	

TRANSFORMER (DRIVER)

ITEM No.	RESISTANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	83Ω	1.3Ω	25B536759-C				TR-24		
	Turns Ratio								
	8½ : 1								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI. 1	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	38.5Ω	3.3Ω	25C536761						
	PRI. 2								
	110Ω								

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	RCA TYPE No.	
SP1	6" X 9"	PM	3-4Ω	50K537864	69A2	238S1	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	14Ω		24K533629				Core part #76K533627
L2	RF Coil	14Ω		24K533629				Core part #76K533627
L3	Osc. Coil	.9Ω	3.7Ω	24K533628				Core part #76K533630
L4	Input IF	19Ω	19Ω	24C485553	16-6758	BC-352	12-C1	
L5	Output IF	19Ω	19Ω	24K485554	16-6770	BC-355	12-C6	
L6	Fil. Choke	0Ω		24K537099				1.2 Microhenries

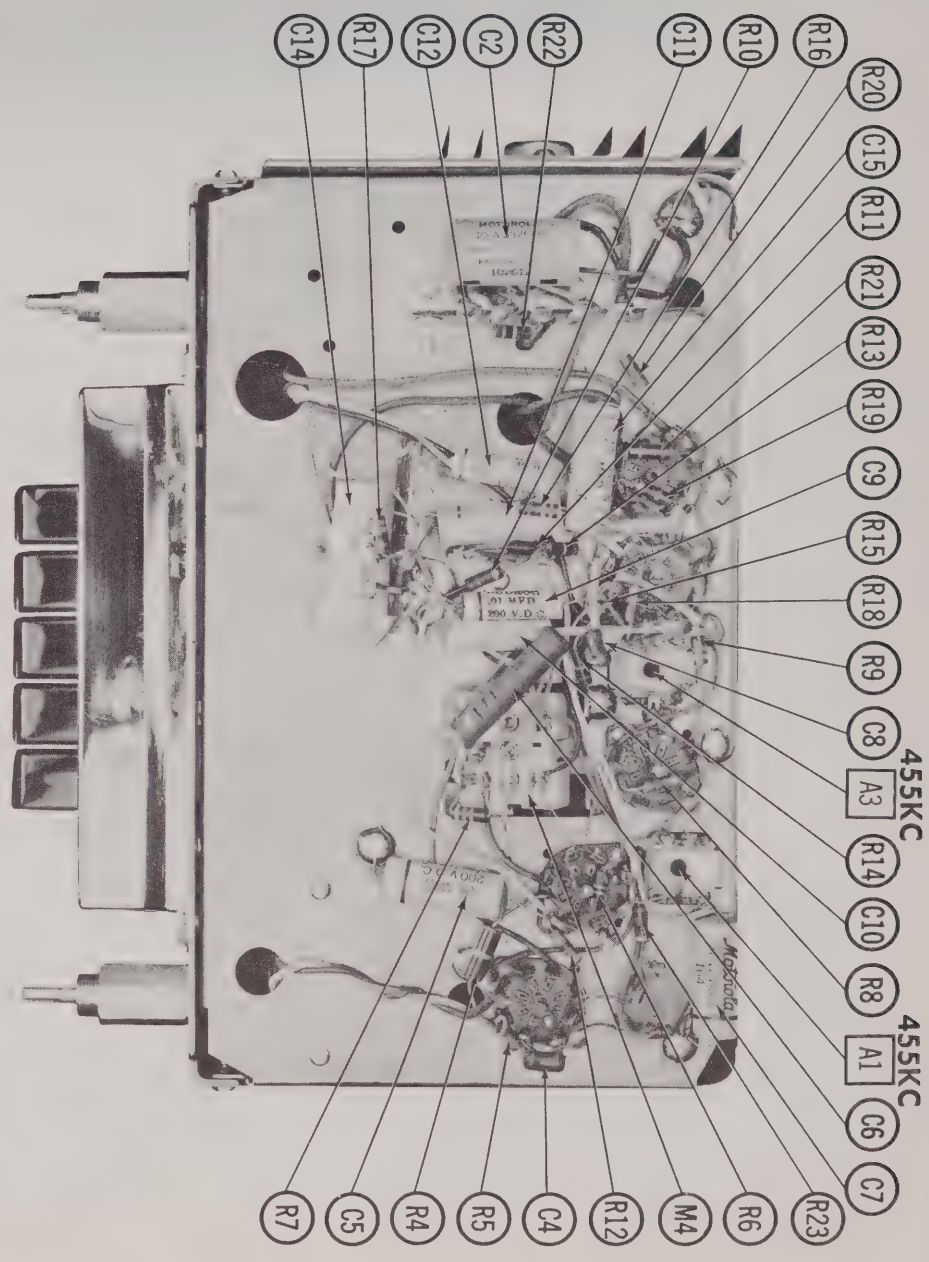
FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L7	.600A	.58Ω	12.6MH	25B536760-0					

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M1	Dial Light	65T533821	#1891
M2	Tuner	77K537733	(AT-179) Permeability, Complete-Includes L1, L2, L3.
M3	Spark Plate	64K530177	
M4	Trimmer Cap.	20B536839	Dual Trimmer: Osc. (A5). 20-180MMF, RF (A6) 7.5-90MMF. Unit also consists of 4.7MMF & 47MMF fixed capacities.
A7	Trimmer Cap.	20K538742	Ant. (50-240MMF)
	Knob	36B534306	Dummy
	Knob	36K534307	Tone
	Knob	36B534305	On-Off-Volume & Tuning
	Pushbutton	38B534308	5 Used

CHASSIS—BOTTOM VIEW



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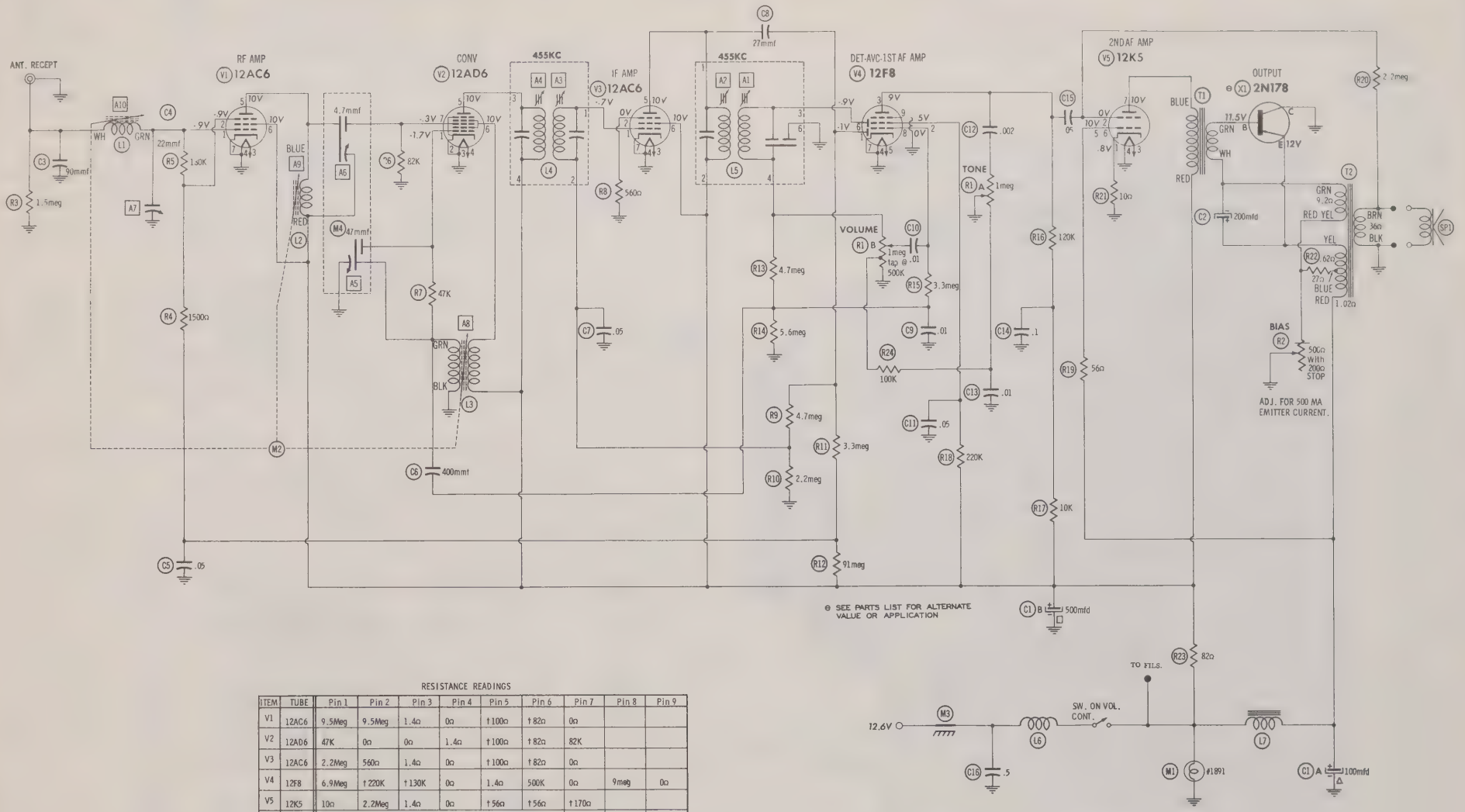
MOTOROLA MODEL CTA6T

MOTOROLA MODEL CTA6T



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AC6	9.5Meg	9.5Meg	1.4Ω	0Ω	†100Ω	†82Ω	0Ω		
V2	12AD6	47K	0Ω	0Ω	1.4Ω	†100Ω	†82Ω	82K		
V3	12AC6	2.2Meg	560Ω	1.4Ω	0Ω	†100Ω	†82Ω	0Ω		
V4	12F8	6.9Meg	†220K	†130K	0Ω	1.4Ω	500K	0Ω	9meg	0Ω
V5	12K5	10Ω	2.2Meg	1.4Ω	0Ω	†56Ω	†56Ω	†170Ω		
		BASE		EMITTER		COLLECTOR				
X1	2N178	▪ †37Ω ▪ †2.6Ω		†2Ω		0Ω				

† MEASURED FROM JUNCTION OF ON-OFF SWITCH AND L7.
▪ DUAL READING INDICATES REVERSAL OF METER LEADS.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6volts for voltage readings.
5. Nominal tolerance on components values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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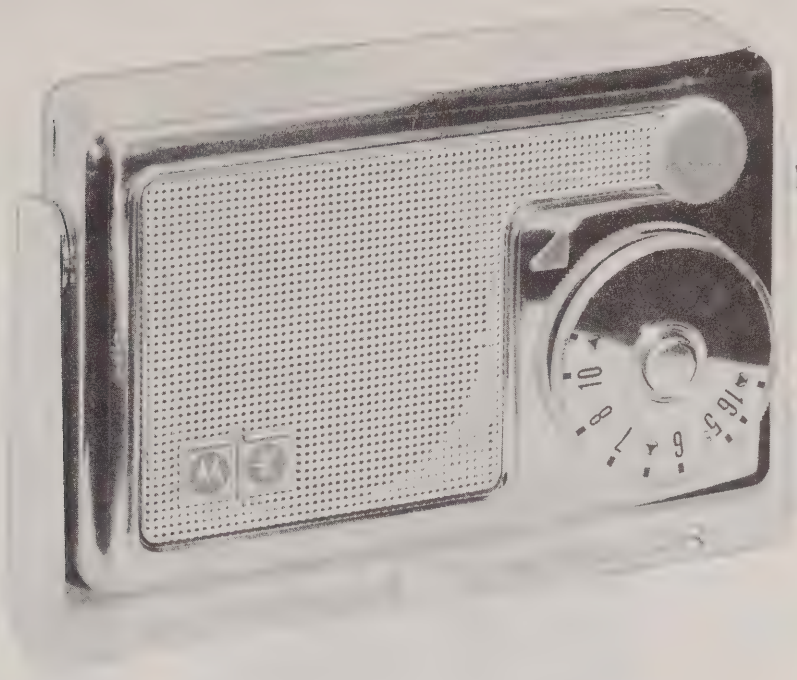
MOTOROLA MODEL
56T1 (Ch. HS-483)



MOTOROLA MODEL
56T1 (Ch. HS-483)

TRADE NAME	Motorola Model 56T1 (Ch. HS-483)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	Battery Operated Portable Transistorized AM Superheterodyne Receiver

POWER SUPPLY 9 Volt Battery RATING 6MA@ 9 Volts DC
TUNING RANGE—BROADCAST 530KC-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Bent paper clip with end flattened may be used to adjust A5 and A6 without removing chassis from cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to antenna stator lug on tuning gang. Low side to chassis.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3	Adjust for maximum output.
2.		Loop	1620KC	"	"	A4	"
3.		"	1400KC	Tune to 1400KC signal	"	A5	"
	Following steps not necessary unless oscillator coil has been tampered with or in case of component replacement in oscillator circuit. If necessary, set oscillator trimmer screw 1/4 turn from tight position before beginning this portion of alignment.						
4.		Loop	530KC	Tuning gang fully closed	Across voice coil	A6	Adjust for maximum output.
5.		"	1620KC	Tuning gang fully open	"	A4	Adjust for maximum output. Repeat steps 4 and 5 until oscillator covers required range.
6.		"	1400KC	Tune to 1400KC signal	"	A5	Adjust for maximum output.

CHASSIS DISASSEMBLY

1. Pull volume control knob from shaft.
2. Remove tuning knob screw. Remove tuning knob.
3. Remove chassis mounting screw located behind tuning knob.
4. Open rear cover. Unsolder grounding braid from L3 (lst. IF transformer).
5. Turn handle perpendicular to the chassis.
6. Disengage handle from chassis, one side at a time.
7. Remove chassis, handle and speaker assembly from cabinet.

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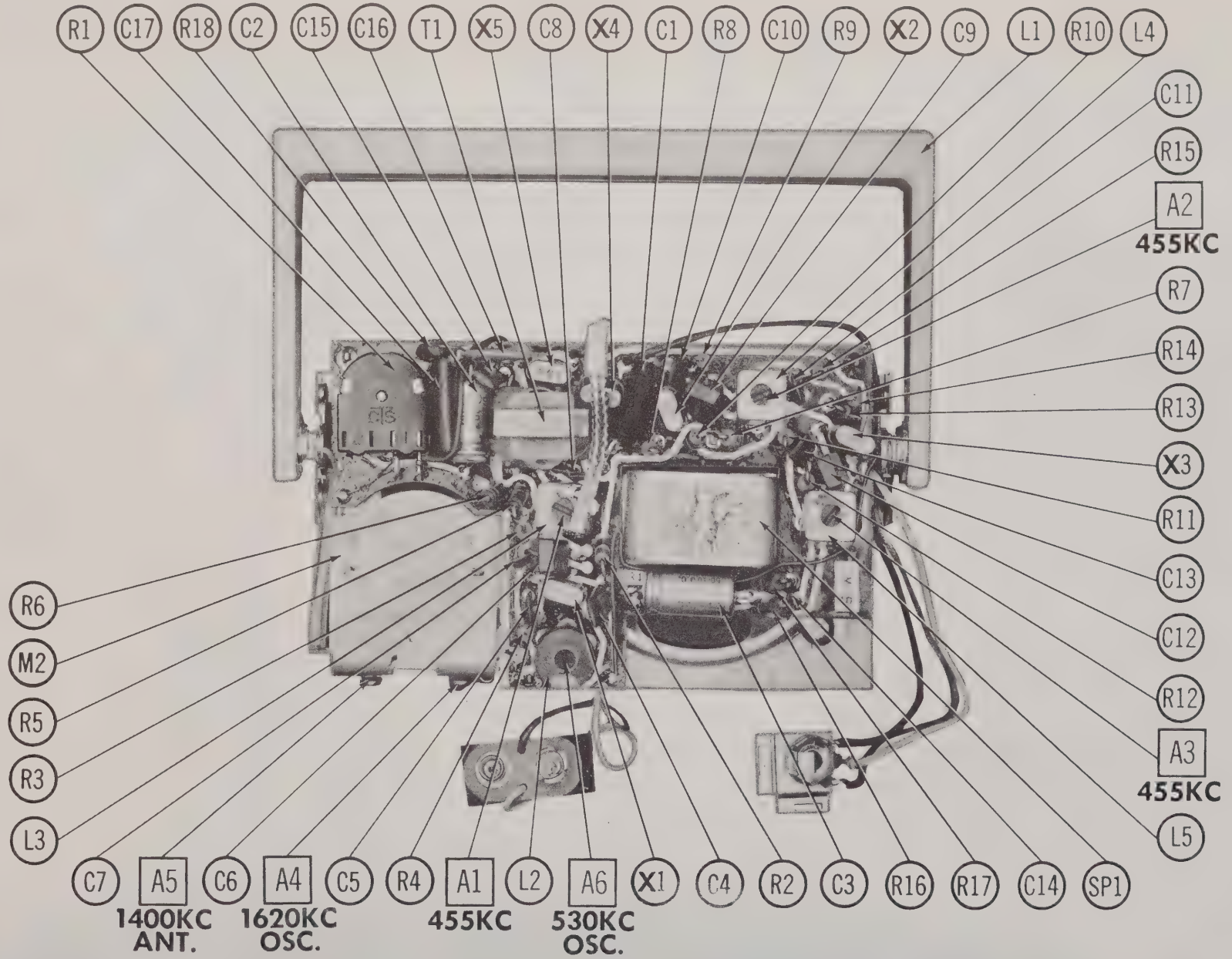


CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	USE	TYPE	NOTES
X1	Converter	2N172	Note 1
X2	lst.IF Amplifier	2N146	Note 2
X3	2nd. IF Amplifier	2N146	Note 3
X4	Det.-AVC-AF Amplifier	R35	Note 4
X5	Output	2S4	

Note 1. Type 820 may be used in some versions. Use 2N172 when replacing.
Note 2. Type 2N147 may be used in some versions. (Part #48C124221). Use original type when replacing.
Note 3. Type 2N145 may be used in some versions. (Part #48C124220). Use original type when replacing.
Note 4. Type 880 may be used in some versions. (Use R35 when replacing.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	12	6	23B635406	XPP6V10	NL12	TAP20-12	ML10-6		TE-1089
C2	25	10	23K635408	XPP10V25	NL21	TAP10-20	ML20-12		TE-1118
C3	50	10	23K635407	XPP10V50	NL29		ML40-15		R2305 *

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	40000		21B635399							
C5	10000		21K635404	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C6	390	500	21K114740							
C7	10000		21K635404	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C8	10000		21K635404	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C9	390	500	21K114740							
C10	10000		21K635404	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C11	10000		21K635404	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C12	390	500	21K114740							
C13	10000		21K635404	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C14	10000		21K635404	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C15	40000		21B635399							
C16	2200			BPD-0022	D6-222	K072	811-0022	UC-5222	5HK-D22	Note 1
C17	200000		21K636014							

Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	1000Ω	½	18B635405					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R2	100K		6R6031	BTS-100K	
R3	470Ω		6R6090	BTS-470	
R4	1500Ω 5%		6R6038	BTS-1500	
R5	22K		6R6397	BTS-22K	
R6	4700Ω		6R6080	BTS-4700	
R7	470Ω		6R6090	BTS-470	
R8	1000Ω		6R6229	BTS-1000	
R9	2200Ω		6R6069	BTS-2200	
R10	22K		6R6397	BTS-22K	
R11	4700Ω		6R6080	BTS-4700	
R12	470Ω		6R6090	BTS-470	
R13	330Ω		6R6022	BTS-330	
R14	1000Ω		6R6229	BTS-1000	
R15	3900Ω		6R5659	BTS-3900	
R16	33K		6R6410	BTS-33K	
R17	1000Ω		6R6229	BTS-1000	
R18	120Ω		6R5551	BTS-120	

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	400Ω	13.6Ω	25B635409				TR-19		

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	RCA TYPE No.	
SP1	2 3/4"	PM	13.6Ω	50B635397			

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Stick	.3Ω	3.2Ω	1V635697				Includes cabinet handle
L2	Osc. Coil	1.2Ω	8.2Ω*	24B635394				* Tapped @ .4Ω
L3	lst.IF Trans.	3.1Ω	1.2Ω	24K635484				
L4	2nd. IF Trans.	3.4Ω ■	1.2Ω	24C635403				■ Tapped @ .5Ω
L5	3rd.IF Trans.	3.4Ω ▲	.9Ω	24K635641				▲ Tapped @ .5Ω

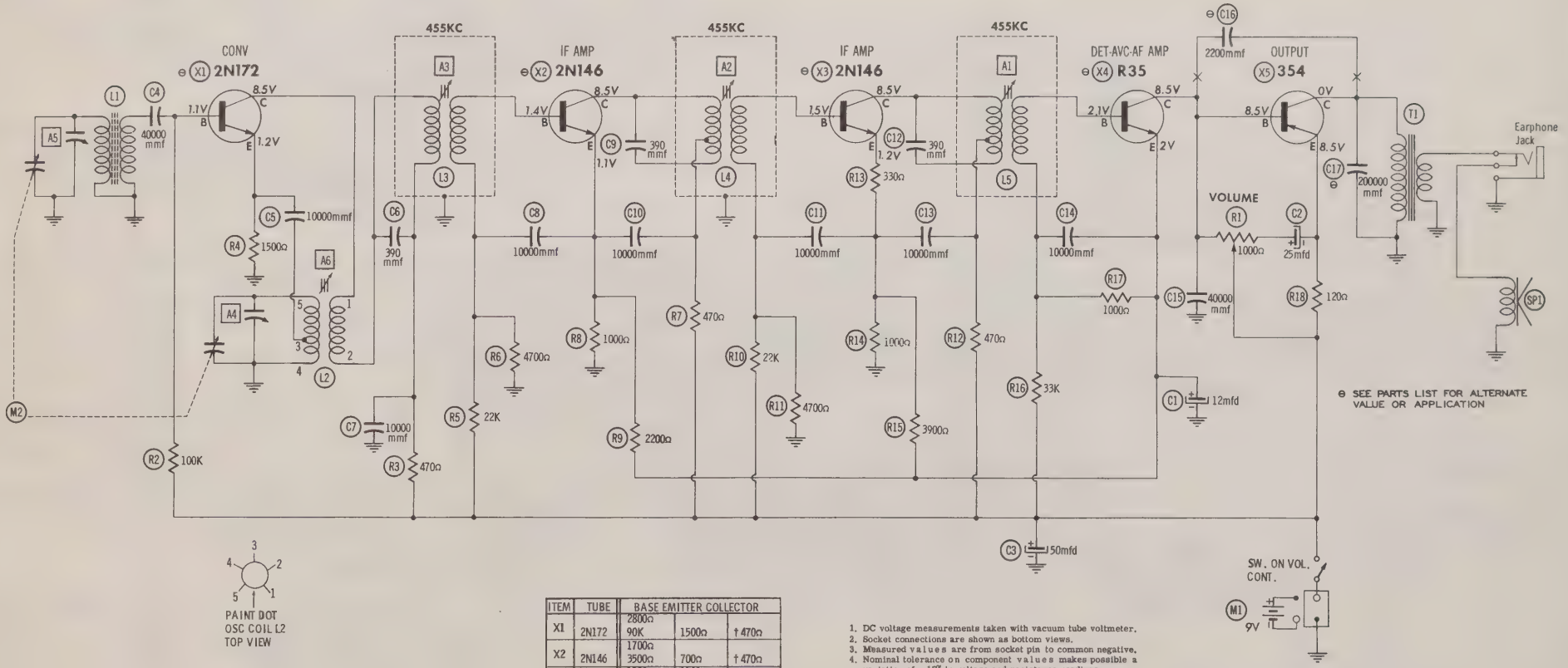
BATTERIES

ITEM No.	VOLTAGE	MOTOROLA PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M1	9V			216			2U6		

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Tuning Cap.	19B635410	2 Gang
	Cabinet	16D635354	Complete - less grille
	Cabinet	16K636169	Back
	Cabinet	16K636168	Front
	Grille	13B635571	Cabinet
	Handle	1V635697	Includes L1
	Knob	36C635520	Tuning
	Knob	36B635434	On-off-volume

MOTOROLA MODEL 56T1 (Ch. HS-483)



PAINT DOT
OSC COIL L2
TOP VIEW

ITEM	TUBE	BASE	EMITTER	COLLECTOR	
X1	2N172	2800Ω 90K	1500Ω		†470Ω
X2	2N146	1700Ω 3500Ω	700Ω		†470Ω
X3	2N146	1900Ω 3800Ω	1100Ω 900Ω		†470Ω
X4	R35	2500Ω	1500Ω		†900Ω †600Ω
X5	354	†900Ω †600Ω	†120Ω		30Ω

† MEASURED FROM POSITIVE SIDE OF C3.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

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SILVERTONE MODELS 7100, A, AY, AZ, Y, Z, 7101, A, AY, AZ, Y, Z, 7102, 7103, R, S, T, 7110, A, 7111, A, 7112, A, 7113, A, 7126, A, 7127, A (Ch. 528.50000, 528.5002, 528.50010, 528.50012, 528.50014, 528.50020, 528.50021, 528.50022, 528.50030)

SILVERTONE MODEL 7100 (Ch. 528.50000)

TRADE NAME	Silvertone	MODELS	CHASSIS
		7100, 7100Y, 7100Z, 7110, 7112, 7126	528.50000, 528.50002
		7100A, 7100AY, 7100AZ, 7102, 7110A, 7112A, 7126A	528.50020, 528.50021, 528.50022
		7101, 7101Y, 7101Z, 7111, 7113, 7127	528.50010, 528.50012, 528.50014
		7101A, 7101AY, 7101AZ, 7103, 7103R, 7103S, 7103T, 7111A, 7113A, 7127A	528.50030
SUPPLIER	Sears Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois		
TYPE SET	Television Receiver		
TUBES	Fourteen		
POWER SUPPLY	110-120 Volts AC-60 Cycle	RATING 1.3 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

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DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 5 push-on type control knobs from side panel of cabinet.
2. Remove 4 metal screws. Remove rear cover.
3. Disconnect speaker leads, picture tube socket and HV lead.
4. Remove ion trap and width sleeve.
5. Remove 2 metal screws holding AC interlock bracket and 2 metal screws at top of cabinet rear holding chassis brackets.
6. Remove 2 chassis bolts. Remove chassis.
7. Remove 2 speaker nuts. Remove speaker.

MODEL	CHASSIS
7100	528.50000

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removing the channel selector and fine tuning knobs.

PICTURE TUBE SAFETY GLASS CLEANING

Place receiver on side. Remove 2 metal screws from the bottom of bezel. Remove bezel and safety glass. Use extreme caution when removing safety glass.

SERVICE ADJUSTMENT LOCATION

See tube placement chart on page 5.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjust horizontal hold slug until picture synchronizes horizontally. If picture will not synchronize properly see "Horizontal Sweep Circuit Adjustments" on page 16.

SOUND IF DETECTOR BUZZ ADJUSTMENT

Adjust ratio detector secondary (L18) for maximum sound and minimum buzz.

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

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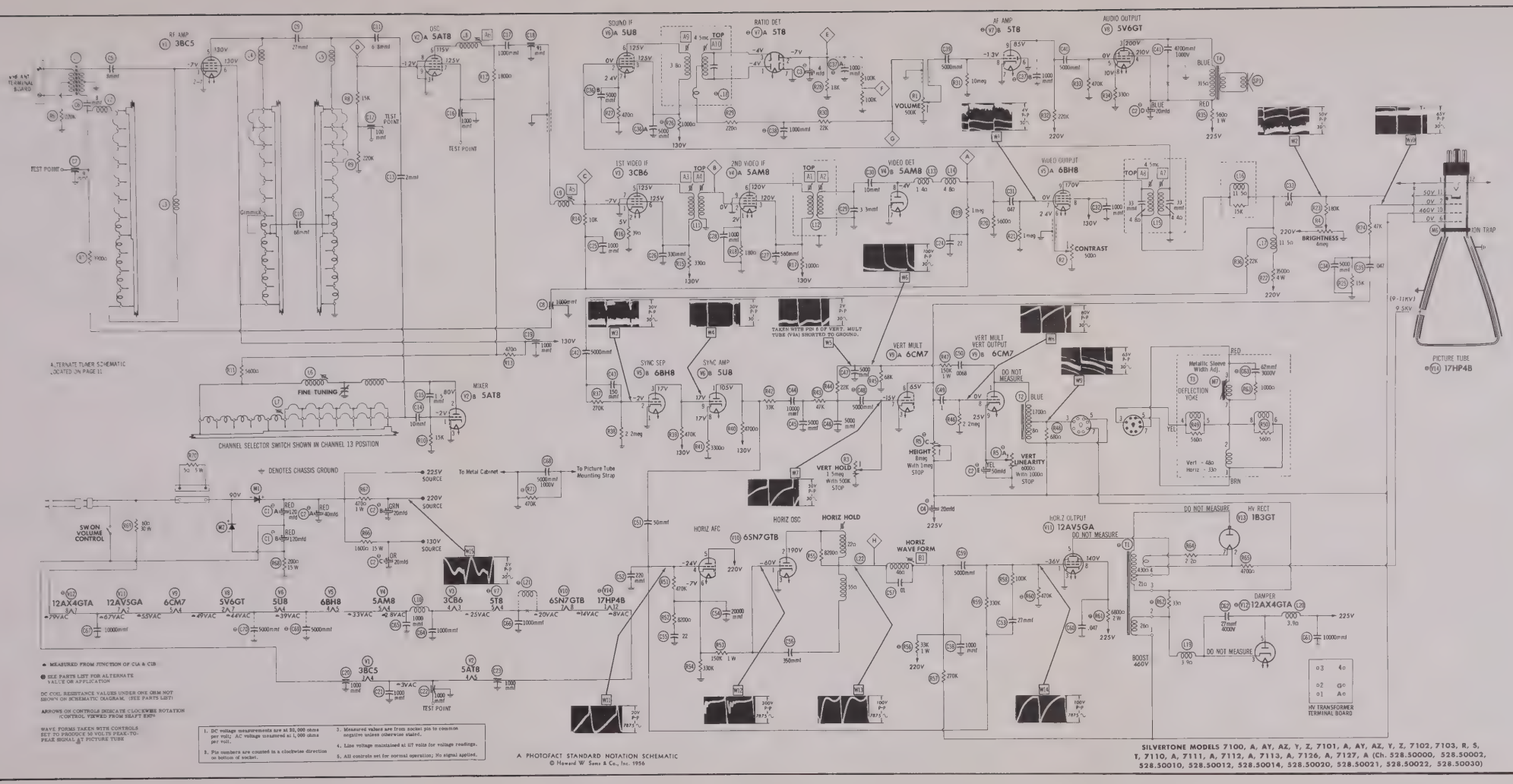
RF AMP V1 3BC5
OSC V2 5AT8
SOUND IF V6 A 5U8
RATIO DET V7 A 5T8
AF AMP V7 B 5T8
AUDIO OUTPUT V8 5V6GT
1ST VIDEO IF V3 3CB6
2ND VIDEO IF V4 A 5AM8
VIDEO DET V4 B 5AM8
VIDEO OUTPUT V5 A 6BH8
MIXER V2 B 5AT8
SYNC SEP V5 B 6BH8
SYNC AMP V6 B 5U8
VERT MULT V9 A 6CM7
VERT MULT VERT OUTPUT V9 B 6CM7
HORIZ OSC HORIZ HOLD V10 6SN7GTB
HORIZ AFC
HORIZ WAVE FORM
HORIZ OUTPUT V11 12AV5GA
HV RECT V13 1B3GT
DAMPER V12 12AX4GTA
PICTURE TUBE V14 17HP4B
ION TRAP
VOLUME 500K
BRIGHTNESS 4meg
CONTRAST 500Ω
HEIGHT 8meg With 1meg STOP
VERT LINEARITY 6000Ω With 1000Ω STOP
VERT HOLD 1.5meg With 500K STOP
HORIZ HOLD
FINE TUNING
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
ALTERNATE TUNER SCHEMATIC LOCATED ON PAGE 11
VHF ANT TERMINAL BOARD
TEST POINT
DENOTES CHASSIS GROUND
225V SOURCE
220V SOURCE
130V SOURCE
To Metal Cabinet
To Picture Tube Mounting Strap
S-W ON VOLUME CONTROL
DEFLECTION YOKE
Metallic Sleeve Width Adj.
Vert - 48Ω
Horiz - 33Ω
DO NOT MEASURE
BOOST 460V
HV TRANSFORMER TERMINAL BOARD
TAKEN WITH PIN 6 OF VERT. MULT TUBE (V9A) SHORTED TO GROUND.
12AX4GTA 12AV5GA 6CM7 5V6GT 5U8 6BH8 5AM8 3CB6 5T8 6SN7GTB 17HP4B
3BC5 5AT8
TEST POINT

- ▲ MEASURED FROM JUNCTION OF C1A & C1B
- ● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM. (SEE PARTS LIST)

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE

1. DC voltage measurements are at 20,000 ohms per volt; AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; No signal applied.

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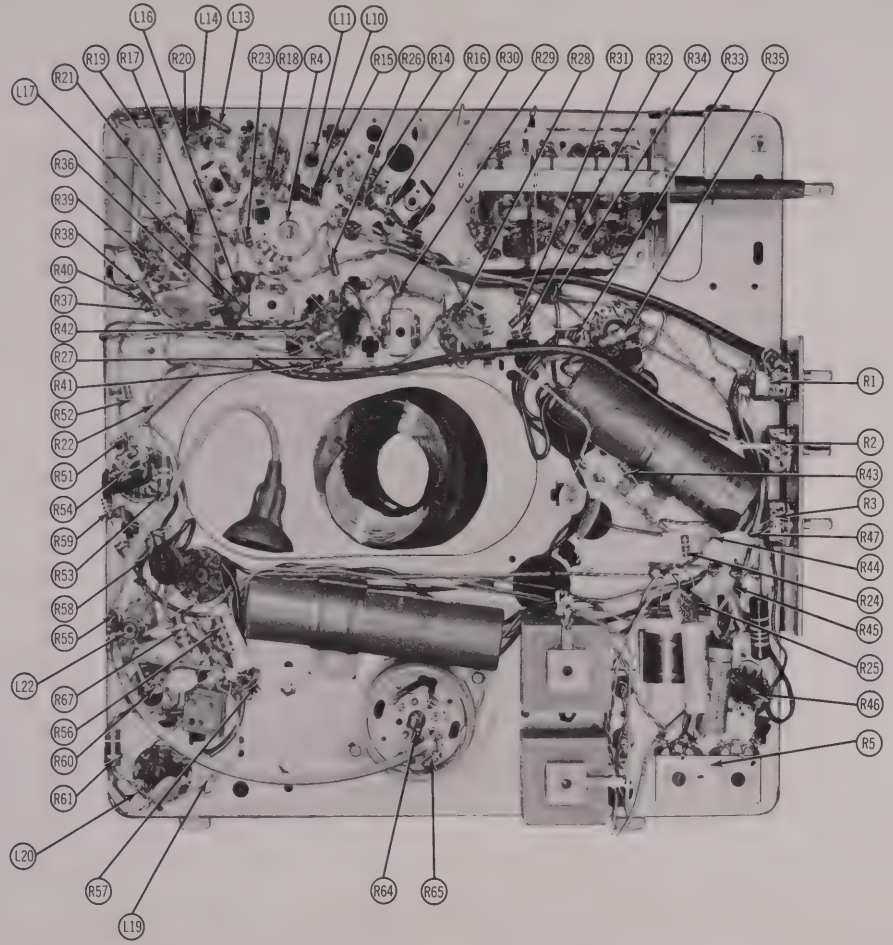
SILVERTONE MODELS 7100, A, AY, AZ, Y, Z, 7101, A, AY, AZ, Y, Z, 7102, 7103, R, S, T, 7110, A, 7111, A, 7112, A, 7113, A, 7126, A, 7127, A (Ch. 528.50000, 528.50002, 528.50010, 528.50012, 528.50014, 528.50020, 528.50021, 528.50022, 528.50030)

SILVERTONE MODELS 7100, A, AY, AZ, Y, Z, 7101, A, AY, AZ, Y, Z, 7102, 7103, R, S, T, 7110, A, 7111, A, 7112, A, 7113, A, 7126, A, 7127, A (Ch. 528.50000, 528.50002, 528.50010, 528.50012, 528.50014, 528.50020, 528.50021, 528.50022, 528.50030)



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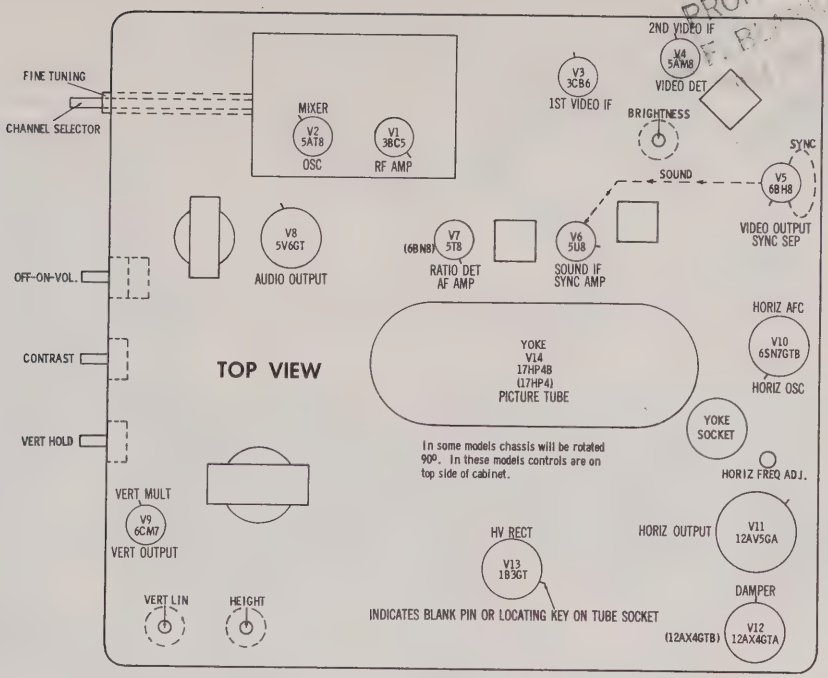
CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

SILVERTONE MODELS 7100, A, AY, AZ, Y, Z, 7101, A, AY, AZ, Y, Z, 7102, 7103, R, S, T, 7110, A, 7111, A, 7112, A, 7113, A, 7126, A, 7127, A (Ch. 528.50000, 528.50002, 528.50010, 528.50012, 528.50014, 528.50020, 528.50021, 528.50022, 528.50030).

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

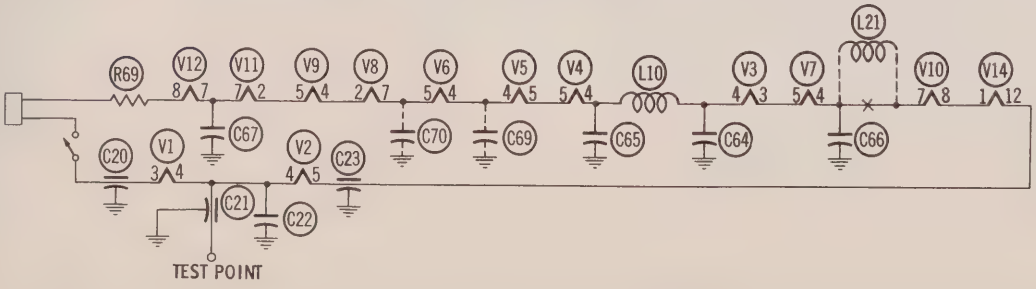
POWER SUPPLY FAILURE
No raster, no sound - **Selenium Rectifiers (M1 & M2)**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V2, V3, V4, V5**
No pic, no sound, has snow - **V1, V2, V3**
No pic, has sound, has raster - **V5, V14**
Has pic, no sound - **V6, V7, V8**

SYNC FAILURE
No vert. sync - **V6, V9**
No horiz. sync - **V6, V10**
No vert. or horiz. sync - **V5, V6**

SWEEP FAILURE
No raster, has sound - **V10, V11, V12, V13, V14**
No vertical deflection - **V9**
Poor vert. linearity or foldover - **V9**
Poor horiz. linearity or foldover - **V10, V11, V12**
Narrow picture - **V10, V11, V12, V13, M1, M2**
Vert. off freq. - **V6, V9**
Horiz. off freq. - **V6, V10**

NOTE: Since this receiver employs tubes used in a series filament network, an open filament in any tube in series will cause the set to be inoperative. (See circuit below).



SET 339 FOLDER 13

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use an isolation transformer to protect the test equipment.
Allow at least 5 minutes warm-up period for test equipment and receiver.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias battery to the ungrounded side of C24. Positive to chassis.
If sweep generator has no built in marker, loosely couple a separate marker generator to sweep generator output.
Use only enough sweep generator output to provide usable pattern on scope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to point Ⓑ. Low side to chassis.	44MC (10MC Swp)	44MC	Any non-interfering channel.	Vert. amp. thru 10K to point Ⓐ. Low side to chassis.	A1	Preset A2 fully clockwise (from rear of chassis) and adjust A1 for maximum amplitude at 44MC marker as in Fig. 1.
2.	"	"	"	42.5MC 46.0MC	"	"	A2	Adjust A2 for response curve similar to Fig. 2 with markers at 70%.
3.	.001MFD	High side thru .001MFD to point Ⓒ. Low side to chassis.	"	44MC	"	"	A3	Preset A4 fully counter clockwise. Adjust A3 for maximum amplitude at 44MC marker as in Fig. 1.
4.	"	"	"	42.75MC 45.75MC	"	"	A4	Adjust A4 for response curve similar to Fig. 3 with markers at 70%.
5.	Direct	High side to point Ⓓ. Low side to chassis.	"	44MC	"	"	A5	Detune A6 and adjust A5 for maximum amplitude at 44MC marker.
6.	"	"	"	42.75MC 45.75MC	"	"	A6	Adjust A6 for response similar to Fig. 4 with markers at 50%.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point Ⓔ to chassis. The junction of these two resistors is alignment point Ⓕ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.001MFD	High side to point Ⓐ. Low side to chassis.	4.5MC (unmod)	Any	DC probe to point Ⓔ. Common to chassis.	A7, A8, A9	Adjust for maximum deflection.
8.	"	"	"	"	DC probe to point Ⓖ. Common to point Ⓕ.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.001MFD	High side to point Ⓕ. Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp. to point Ⓔ. Low side to chassis.	A7, A8, A9	Disconnect stabilizing capacitor (C3). Adjust for curve of maximum amplitude and symmetry similar to Fig. 4.
8.	"	"	"	"	"	Vert. amp. to point Ⓖ. Low side to chassis.	A10	Reconnect C3. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 5. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.

TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

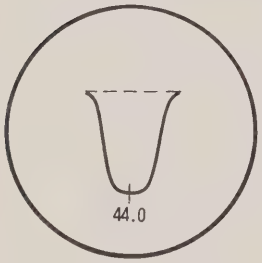


FIG. 1

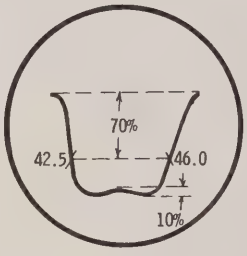


FIG. 2

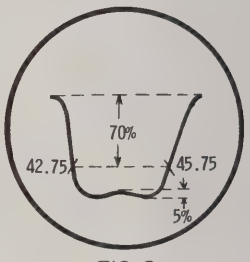


FIG. 3

FIG. 4

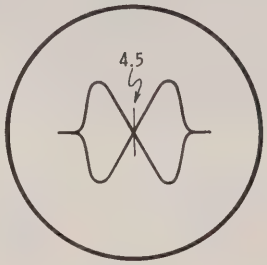
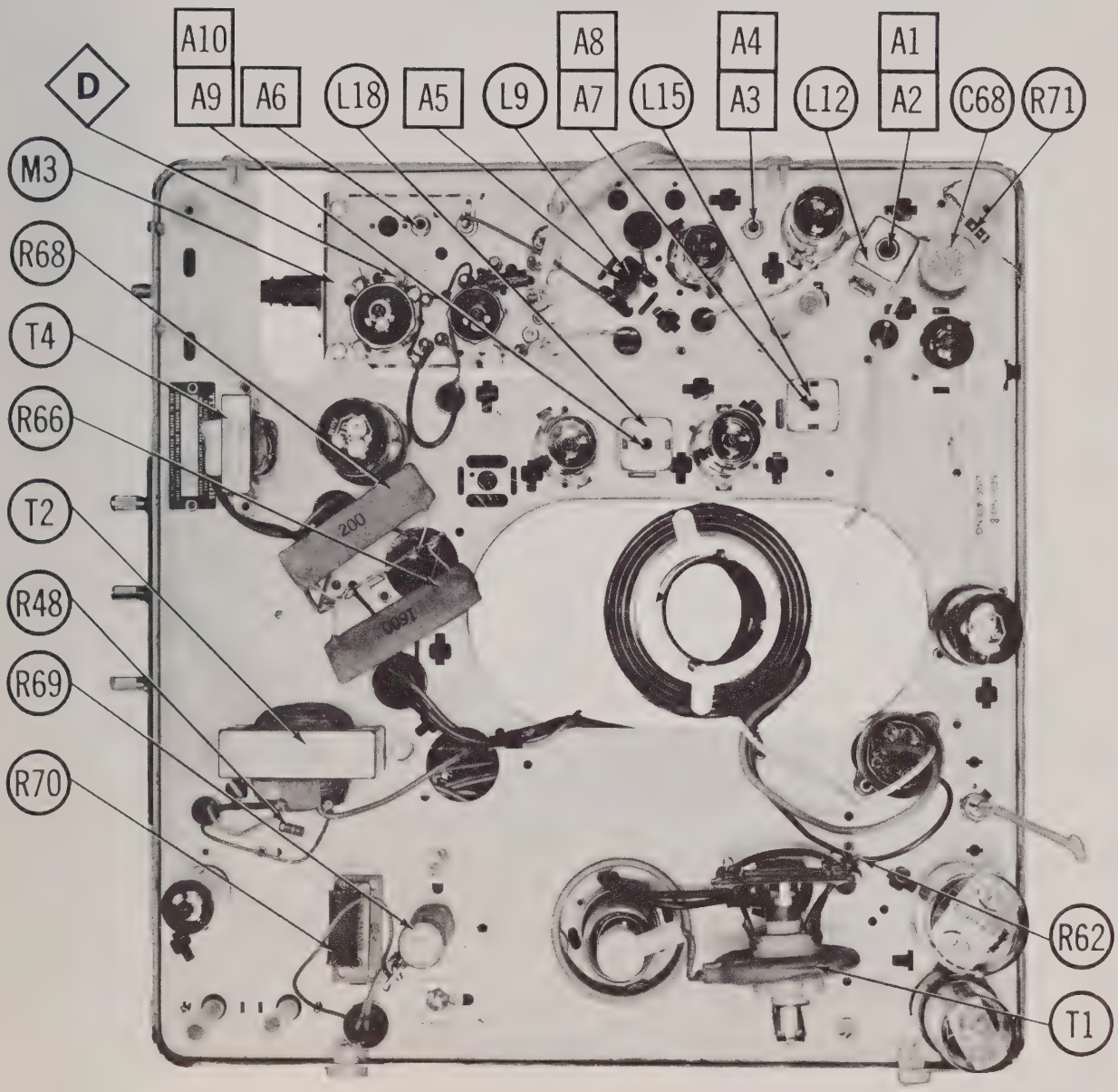


FIG. 5

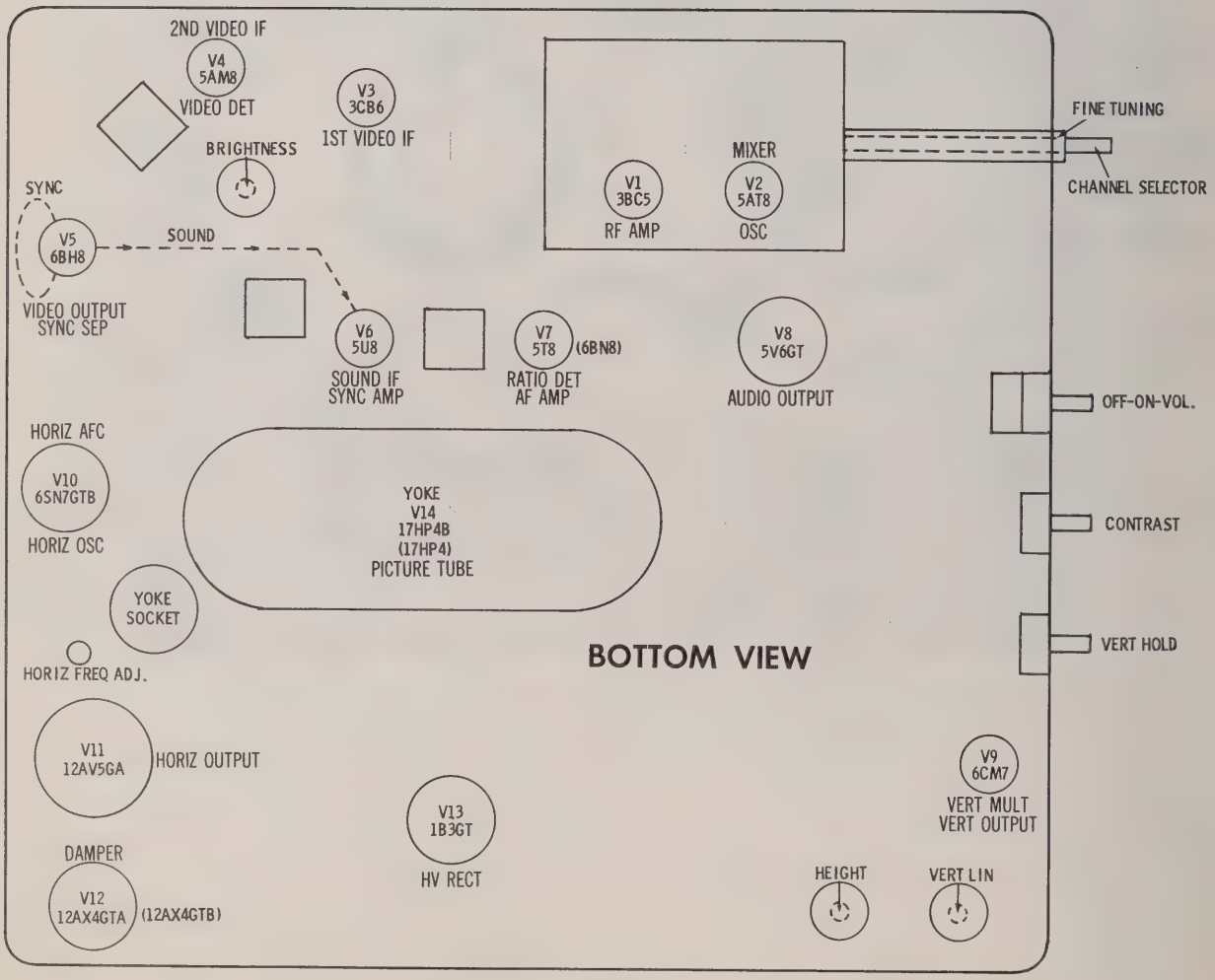


CHASSIS TOP VIEW

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BC5	1Meg	0Ω	▲0Ω	▲1Ω	†1600Ω	†1600Ω	0Ω		
V2	5AT8	15K	†7500Ω	0Ω	▲1Ω	▲2Ω	†4000Ω	†2000Ω	0Ω	235K
V3	3CB6	1Meg	39Ω	▲6.5Ω	▲7.5Ω	†1900Ω	†1900Ω	0Ω		
V4	5AM8	180Ω	.1Ω	†2600Ω	▲7.5Ω	▲8.5Ω	†2600Ω	0Ω	5600Ω	0Ω
V5	6BH8	0Ω	2.2Meg	†470K	▲10Ω	▲8.5Ω	●150Ω	1Meg	†1600Ω	†4000Ω
V6	5U8	†6500Ω	4.4Ω	†2600Ω	▲10Ω	▲11Ω	†2600Ω	470Ω	3300Ω	†470K
V7	5T8	500K	18K	500K	▲5Ω	▲6.5Ω	0Ω	0Ω	10Meg	†220K
V8	5V6GT	TP	▲12Ω	†900Ω	†560Ω	470K	TP	▲11Ω	330Ω	
V9	6CM7	*1700Ω	NC	0Ω	▲12Ω	▲14Ω	●*3.5Meg	●1Meg	2.2Meg	●2300Ω
V10	6SN7GTB	400K	†33K	0Ω	400K	†470Ω	270K	▲5Ω	▲3.5Ω	
V11	12AV5GA	350K	▲14Ω	0Ω	NC	*48Ω	NC	▲16Ω	†6800Ω	
V12	12AX4GTA	NC	TP	200K	NC	†3.9Ω	TP	▲16Ω	▲19Ω	
V13	1B3GT		PINS	1 - 8	HAVE	INFINITE	RESISTANCE			TOP CAP *480Ω
V14	17HP4B	▲3.5Ω	60K	Pin 6 60K	Pin 10 *23Ω	Pin 11 ●†500K	Pin 12 ▲2Ω			

† MEASURED FROM OUTPUT OF M2.
▲ MEASURED FROM JUNCTION OF C1A AND C1B.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
* MEASURED FROM PIN 3 OF V12.
NC NO CONNECTION.
TP TIE POINT.



TUBE PLACEMENT CHART

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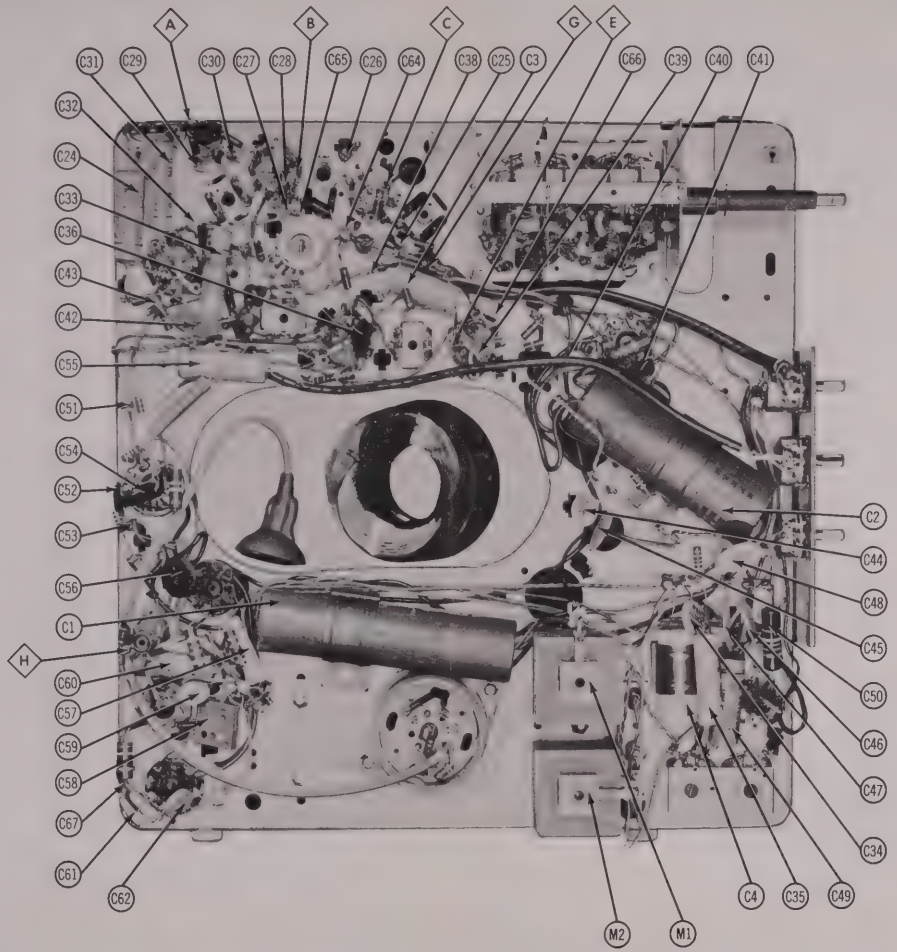


CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

SILVERTONE MODELS 7100, A, AY, AZ, Y, Z, 7101, A, AY, AZ, Y, Z, 7102, 7103, R, S, T, 7110, A, 7111, A, 7112, A, 7113, A, 7126, A, 7127, A (Ch. 528.50000, 528.50002, 528.50010, 528.50012, 528.50014, 528.50020, 528.50021, 528.50022, 528.50030)

SET 339 FOLDER 13

PROPERTY OF
L. F. BLANKENSHIP
3024 MEADE ST.
DENVER, COLORADO

SILVERTONE MODELS 7100, A, AY, AZ, Y, Z, 7101, A, AY, AZ, Y, Z, 7102, 7103, R, S, T, 7110, A, 7111, A, 7112, A, 7113, A, 7126, A, 7127, A (Ch. 528.50000, 528.50002, 528.50010, 528.50012, 528.50014, 528.50020, 528.50021, 528.50022, 528.50030)

ALTERNATE VHF-UHF TUNER SCHEMATIC

PROPERTY OF
U. S. GOVERNMENT

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	RF Amp.	3BC5	
V2	Mixer	5AT8	
V3	1st Video IF Amp.	3CB6	
V4	2nd Video IF Amp. - Video Det.	5AM8	
V5	Video Output - Sync Sep.	6BH8	
V6	Sound IF Amp. - Sync Amp.	3U8	
V7	Ratio Det- AF Amp.	5T8	Note 1
V8	Audio Output	6V6GT	
V9	Vert. Mult. - Vert. Output	6LM7	
V10	Horiz. AFC-Horiz. Osc.	6BN7GTB	
V11	Horiz. Output	12AV5GA	
V12	Damper	12AX4GTA	Note 2
V13	H. V. Rectifier	1B3GT	

Note 1. 6BH8 may be used in some versions.
Note 2: 12AX4GTB may be used in some versions.

PICTURE TUBE

ITEM No	REPLACEMENT DATA				NOTES
	SILVERTONE PART No	CBS PART No	GENERAL ELECTRIC PART No	SYLVANIA PART No	
V14	17MP4B	17MP4B ① 17MP4 ② 17MP4 ③	17MP4B ① 17MP4 ② 17MP4 ③	17MP4B ① 17MP4 ② 17MP4 ③ 17RP4	① Aluminized ② Silver Screen "B5"
	17AVP4A	17AVP4A	17AVP4A	17AVP4A ② 17AVP4	
	21ATP4	21ATP4 ①	21ATP4 ①	21ATP4 ② 21ATP4A ②	
	21AVP4A	21AVP4A ① 21AVP4	21AVP4A ①	21AVP4A ②	
			21AVP4A (B ①)	21AVP4A (B ②)	

ELECTROLYTIC CAPACITORS

ITEM No	RATING		REPLACEMENT DATA					
	CAP	VOLT	SILVERTONE PART No	AEROVOX PART No	CORNELL-DUBILIER PART No	PYRAMID PART No	SANGAMO PART No	SPRAGUE PART No
C1A	120	150	18-380 (Note 1)	PRS2-050	BRS1015	TC495		MT-15100
B	120	150			BRL5015	TC495		MT-15100
C2A	40	300	18-374 (Note 3)	PRS-500		WV404		Q-500
B	20	300						MT-0580
C	20	300						
D	20	300						
E	30	50						
C3	4	50	18-339 Note 3)	PRS150V4	BR550	TC30	TD-4-50	WMT-0505
C4	20	300	18-334 Note 4)	PRS350V20	BR2035	TC69	TD-20-350	FM-4520

ITEM No	REPLACEMENT DATA				NOTES
	CENTRALAB PART No	ERIE PART No	MALLORY PART No	SPRAGUE PART No	
C1A				TVA-1422	
B				TVA-1422	
C2A				R2125*	
B					
C					
D					
E					
C3	TD-4-50	WMT-0505	TVA-1303		
C4	TD-20-350	FM-4520	TVA-1608		

Note 1: Some versions may use mfgr's. part no. 18-378 for C1. Chassis 528. 50100 use part no. 18-8-5 or 18-7-5).
Note 2: Chassis 528. 50100 use mfgr's. part no. 18-30-5 for C2.
Note 3: Chassis 528. 50100 use mfgr's. part no. 18-35-5 for C3.
Note 4: Chassis 528. 50100 use mfgr's. part no. 18-33-5 for C4.
* Non catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING		REPLACEMENT DATA							NOTES
	CAP	VOLT	SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	8		162-809			Z015				
C6	8		162-809			Z015				
C7	2		145-909							
C8	1000		144-1							
C9	27		210-278							
C10	68		210-688		TCZ-R68	TZ02	N9OA-6R68			
C11	6.8		228-689	NPO-616. 8	TCZ-6R8	Z013	NP0A-6R8	ZT-5568	5TCCB-V68	
C12	100		248-101							
C13	3		210-309			Z005				
C14	10		163-100	NPO-D1O	TCS-10	Z018	NP0A-100	ZT-561	5TCC-Q1	
C15	L 5		171-159							
C16	1000		144-1							
C17	1000		2033-23	DI-001		DD-102	OD60	8H-102	5GA-D1	
C18	91		246-910							
C19	1000		144-1							
C20	1000		144-1							
C21	1000		144-1							
C22	1000		2033-23	DI-001		DD-102	G969	8U-102	UC-521	5GA-D1
C23	1000		144-1							
C24	22	200	20-38-1	P28N-22		CUB2P22		PT4022	2TM-P22	
C25	1000		15-10217	BPD-001		DD-102	KD69	801-001	DC521	5HK-D1
C26	1500		15-10317	1469-00033		D6-381	5RS773	81-331		MS-331
C27	580		15-5611	1484-00058		D6-581	5RS756	81-581		MS-358
C28	1000		15-10217	BPD-001		DD-102	KD69	801-001	DC521	5HK-D1
C29	3-3		15-33913	NPO-S13.3		TCZ-3R3	Z008	NP0A-3R3	2T-5533	5TCCB-V33
C30	10		20-14-0	NPO-S10		TZ08	NP0A-100		ZT-541	5TCC-Q1
C31	047	200	20-47-1	BPD-D5		CUB2B47			PT4147	2TM-S47
C32	1000		15-10317	BPD-001		DD-102	KD69	801-001	DC521	5HK-D1
C33	047	400	20-30-1	BPD-D5		DF-503	CUB4B47		PT4147	4TM-S47
C34	047	400	20-30-1	BPD-006		DF-502	KD80	81-005	DC525	5HK-D5
C35	047	400	16-47343	BPD-05		DF-503	CUB4B47		PT4147	4TM-S47
C36A	5000		15-30218	BPD-502	DD2-502	D6D80	} 81-005	DC525	} 5HK-D5	Note 9
B	5000						} 81-006	DC525		
C37A	1000		15-10218	BPD-XD01	DD2-102	D6D80	BSD-001	DC2D31	5HK-XD1	Note 5
B	1000									Note 5
C38	1000		15-10317	BPD-001	DD-102	KD69	801-001	DC521	5HK-D1	Note 6
C39	5000		15-50317	BPD-006	DD-502	KD80	81-005	DC525	5HK-D5	
C40	5000		15-50217	BPD-005	DD-502	KD80	81-005	DC525	5HK-D5	
C41	4700	1000	15-47224	BVD-15-4700	D6-472	VD47	1R5KV-472		10HK-D47	
C42	5000		20-29-0	DI-005	DD-502	1W5D5	GP3-533-502	UC-525		5GA-D5
C43	150		15-15114	NT50-D150	TCH-150		NT50-337-101			5TCU-T15
C44	10000		15-10317	BPD-01	DD-103	KD69	81-01	DC531	DC531	5HK-E1
C45	5000		20-29-0	DI-005	DD-502	1W5D5	GP3-533-502	UC-525		5GA-D5
C46	5000		20-29-0	DI-005	DD-502	1W5D5	GP3-533-502	UC-525		5GA-D5
C47	5000		20-29-0	DI-005	DD-502	1W5D5	GP3-533-502	UC-525		5GA-D5
C48	5000		20-29-0	DI-005	DD-502	1W5D5	GP3-533-502	UC-525		5GA-D5
C49	.1	400	16-10443	P48D#-1		DF-504	CUB4P1		PT403	4TM-P1
C50	.0068	600	16-68257							
C51	50		20-13-0	NP0-S150	TCZ-50	2D34	NP0-338-500	ZT-548	5TCC-Q5	
C52	220			NP0-S220	D6-221	22R5T23	81J-331		M5-323	
C53	21		20-15-0	1469-00027	D6-210	TZ16				
C54	20000		15-20317	BPD-03	DF-203	KD85	81T-02		5HK-E3	
C55	.22	200	20-28-1	P28N-22		CUB2P22		PT4022	2TM-P22	
C56	150		15-15114							
C57	.01	600	20-16-1				1R5DH		MCB385	M5-21
C58	1000	500	15-10219	1484-001			1W5D5		DC535	5HK-D5
C59	5000		15-50217	BPD-005		DD-502	1W5D5		DC525	5HK-D5
C60	.047	400	20-30-1	BPD-05		DF-503	CUB4B47		PT4147	4TM-S47

PARTS LIST AND DESCRIPTIONS

CAPACITORS (cont)

ITEM No	RATING		REPLACEMENT DATA						NOTES
	CAP	VOLT	SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	
C61	10000		15-10317	BPD-01	DD-103	KD82	81J-01	DC531	5HK-E1
C62	27	4000	15-27041						
C63	82	3000							Note 8
C64	1000		15-10217	BPD-001	DD-102	KD69	801-001	DC521	5HK-D1
C65	1000		15-10217	BVD-001	DD-102	KD69	801-001	DC521	5HK-D1
C66	1000		15-10317	BPD-001	DD-102	KD69	801-001	DC521	5HK-D1
C67	10000		15-10317	BPD-01	DD-103	KD82	81J-01	DC531	5HK-E1
C68	5000	1000	20-17-0	BVD-15-4700	DD-502	VD47	1R5KV-472		10HK-D5
C69	5000		15-50217	BPD-005	DD-502	KD80	81-005	DC525	5HK-D5
C70	5000		15-50217	BPD-005	DD-502	KD80	81-005	DC525	5HK-D5

Note 5: Not used in some versions.
Note 6: Some versions may use 560MMF in this application. (Part no. 15-5611)
Note 7: Some versions may use 10%, .0068MFD unit (part no. 15-68257) in this application.
Note 8: Some versions may use 56MMF in this application. In chassis 528. 50031 and 528. 50081 68MMF is used in this application.
Note 9: In chassis 528. 50030 and 528. 50021 a 4000MMF dual is used in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST ANCE	WATTS	SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	1	A24-225	AB-50	A47-500K-2	Q11-133	TA15A	Volume
B	Shaft		Not Req.	AK-4	KS8-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	KB-1	SWE-12	76-1	U3-28	Attach to R1A
R2A	1MEG	1	A25-38	AB-4	A47-500-8	Q11-103	TA52L	Contrast
B	Shaft		Not Req.	AK-4	KS8-3	Not Req.	Not Req.	Attach to R2A
R3A	1.5Meg	1	A25-79	AAB-69	†A47-1Meg-S	†Q11-127	†TA81L	Vert. Hold - 100K Stop
B	Shaft		Not Req.	AK-4	KS8-3	Not Req.	Not Req.	Attach to R3A
R4A	4Meg	1	A25-58	AB-68	A47-4Meg-S	Q11-141	PTA58L	Brightness
B	Shaft		Not Req.	AK-10	KS8-3	TQ	Not Req.	Attach to R4A
R5A	6000Ω	1		TAB-10	†A47-5000-S	†Q11-114	†SU-14	Vert. Linearity-1000Ω Stop Hole ①
B	Shaft			AK-19	RN-3	TQ	Not Req.	Attach to R5A
C	8Meg	1	††A25-90	†AAB-89	†A47-7.5Meg	†Q11-142	†PTA858L	Height-1Meg Stop
D	Shaft			AK-19	RN-3	TQ	Not Req.	Attach to R5C

* Connect a 470K resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control.
† Connect a 1000Ω resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control. (Control viewed from shaft end, terminals down.)
† Connect a 1Meg resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control. (Control viewed from shaft end, terminals down.)
†† Some versions may use alternate control part no.'s. 25-58 and 25-55. These alternate part's are interchangeable with dual unit ONLY if they are replaced together.
Note 1: Some versions may use an alternate control part no. 25-89 in this application.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SILVERTONE PART No.	IRC PART No.	
R6	220K		111-224	BTS-220K	
R7	3900Ω		106-392	BTS-3900	
R8	15K		106-153	BTS-15K	
R9	330K		111-234	BTS-220K	
R10	15K		106-153		
R11	5600Ω		106-562	BTS-5900	
R12	1800Ω		106-182	BTS-1800	
R13	470Ω		111-471	BTS-470	
R14	10K		106-103		
R15	330Ω		106-331	BTS-330	
R16	39Ω		106-390	BTS-39	
R17	1000Ω		106-102	BTS-1000	
R18	180Ω		106-181	BTS-180	
R19	1Meg		106-105	BTS-1Meg	
R20	5600Ω		106-562	BTS-5600	
R21	1Meg		106-105	BTS-1Meg	
R22	1500Ω	4	15-43	PWT-1500	
R23	180K		106-184	BTS-180K	
R24	47K		106-473	BTS-47K	
R25	15K		106-153	BTS-15K	
R26	1000Ω		106-102	BTS-1000	Note 5
R27	470Ω		106-471	BTS-470	
R28	18K		106-183	BTS-18K	
R29	330Ω		106-331	BTS-330	
R30	22K		106-223	BTS-22K	
R31	10Meg		106-106	BTS-10Meg	
R32	220K		106-224	BTS-220K	
R33	470K		106-474	BTS-470K	
R34	330Ω		106-331	BTS-330	
R35	560Ω	1	106-561	BTA-560	
R36	22K		106-223	BTS-22K	
R37	270K		106-274	BTS-270K	
R38	2.2Meg		106-225	BTS-2.2Meg	
R39	470K		106-474	BTS-470K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SILVERTONE PART No.	IRC PART No.	
R40	4700Ω		60-47301	BTS-4700	
R41	3300Ω		60-33301	BTS-3300	
R42	33K		60-33303	BTS-33K	
R43	47K		60-47301	BTS-47K	
R44	22K		60-22301	BTS-22K	
R45	68K		60-68301	BTS-68K	
R46	2.2Meg		60-22305	BTS-2.2Meg	
R47	150K	1	60-15411	BTA-150K	
R48	680Ω		60-68311	BTS-680	Note 8
R49	680Ω				
R50	68Ω				
R51	470K		60-47401		
R52	6300Ω		60-63301		
R53	150K	1	60-15411		
R54	330K		60-33401		
R55	3300Ω		60-33301		
R56	33K	1	60-33311		Note 1
R57	270K		60-27401		
R58	100K		60-10403		
R59	330K		60-33401		
R60	470K		60-47401		Note 6
R61	6800Ω	2	60-68321		Note 2, 7
R62	33Ω		60-33001		Note 3
R63	1000Ω				
R64	2.2Ω		60-22901	BW-2.2	
R65	470Ω		60-47301	BTS-4700	
R66	1800Ω	15	61-11		
R67	470Ω	1	60-47U12	BTA-470	
R68	2200Ω 5%	15	61-41	2D-200 5%	
R69	60Ω	30	61-46		
R70	5Ω	5	43-1009	FR-5. 6	
R71	470K		60-47402	BTS-470K	Note 4
R72	100Ω		60-10202	BTS-1000	Note 9

Note 1: Some versions use 27K 1W in this application. (part #60-27321).
Note 2: Some versions use 5600Ω 2W in this application. (part #60-56221)
Note 3: Some versions use 12Ω in this application. (part #60-12201)
Note 4: Some versions use 3. 2Meg in this application. (part #60-32301)
Note 5: Some versions use 25K in this application. (part #60-25301)
Note 6: Some versions use 1Meg in this application. (part #60-10501)
Note 7: Some versions use 10K 1W in this application. (part #60-10321)
Note 8: Some versions use 470Ω in this application. (part #60-47101)
Note 9: Not used in some versions.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	RCA TYPE No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	Horiz. Output Trans.	80-368 ① 80-390 ② 80-401 ③		HVO-40*						
T2 T3A B	Vert. Output Trans. Yoke(70°) Horiz.(35MH) Vert(38MH)	80-325 10-792 ④ ⑤ 10-796 ⑤ ⑥ 10-826 ⑤ ⑦ 83-938 ⑧ 22-281 ⑨ ⑩ 22-203 ⑨ 83-962 ⑨	Z1806 ④ DF608 ⑤	A-3059 ④ MDF-15 ⑤	226T1 ④	V312 ④ Y70F25 ⑤	A-8141 ④ DY-15A ⑤	26B54 ④ Y7-18 ⑤	A-104X ④ Y7-18-1 ⑤	

① Used in chassis 528. 50000, 528. 50003, 528. 50010, 528. 50012 and 528. 50023.
② Used in chassis 528. 50014, 528. 50021.
③ Used in chassis 528. 50030.
④ Drill new mounting hole(s).
⑤ Includes plug; centering and width devices, capacitor C63 and resistors R49, R50 and R63.
⑥ Used in (70°) models T100, Y, Z, T10, Z, T10, T11, T13, T13A, T15, T127.
⑦ Used in (70°) model: T101Y.
⑧ Used in (90°) models T100A, A-Y, AZ, T10A, T11A, T12A, T13A, T136A, T127A.
⑨ Take rear cover and centering device.
⑩ Clamp for rear cover and centering device.
* With device.
⑪ Use original rear cover and centering device.
⑫ Use original horiz. yoke damping network if necessary
⑬ Connect horiz. yoke damping network across terms #3 and #7.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
4		4					
3		3					
2		2					
1		1					

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T4	5. 8K	3-4Ω	80-319	Z1000 ①	A-3026	A-3878 ①	22S47	S-8X	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V C IMP	SILVERTONE PART No.	QUAM PART No.	RCA TYPE No	
SP1	4"	PM	3-4Ω	70-429 ①	4A07	22S51	① Used in models T100, T100Z, T100Y, T101Y, T101Z, T101, T11, T110, T12, T12Z, T12A, T100A, T12AA, T100A, T100AZ, T100AY, T12AA, T08A, T10AAT, T10AZ, T12, T12S, T12SA, T13SA, T13ZT. ② Used in models T137A, T136A, T126, T127.
	6" X 9"	PM	3-4Ω	70-675 ②			

COILS (RF-IF)

ITEM No.	USE	SILVERTONE PART No	NOTES
L1	Ant. Trans.	2356-1	
L2	RF Choke	310-9	
L3	Ant. Coil	310-9	Channel 13
L4	RF Coil	300-16	Channel 13
L5	Mixer Grid Coil	301-8	Channel 13
L6	Osc. Coil	3361-4	Channel 13
L7	Osc. Coil	3361-4	Channel 6
L8	Conv. Plate	310-8	

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	SILVERTONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L9	Int. Video IF	.1Ω		10-785		TV-131	6225	
L10	Fil. Choke	0Ω		33-246	19-1001		4604	
L11	2nd Video IF	.1Ω	.1Ω	10-786				
L12	3rd Video IF	.1Ω	.1Ω	10-787				
L13	Series Peaking Coil	1. 4Ω		10-789			4612	1L 6 Microhenries
L14	Series Peaking Coil	4. 8Ω		10-788			6110	80 Microhenries
L15A	4. 5MC Trap	4. 8Ω		10-781				
B	Sound IF	4. 8Ω						
L16	Series Peaking Coil	1L 5Ω		10-790			6130*	270 Microhenries; Wound on 15K resistor
L17	Shunt Peaking Coil	1L 5Ω		10-590			6120	269 Microhenries
L18	Ratio Det.	2. 8Ω	1. 8OCT	10-589	17-3497	TV-115	6305	Tertiary winding - .8Ω; Note 1
L19	RF Choke	2. 8Ω		33-248				4. 7 Microhenries
L20	RF Choke	2. 8Ω		33-248				4. 7 Microhenries
L21	Fil. Choke	0Ω		33-246	19-1001		4604	Note 2

Note 1: Alternate part #10-715.
Note 2: Not used in all versions.
* Parallel with 15K resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA							NOTES
	PRI.	SEC.	SILVERTONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Ram PART No.	Thordarson PART No.	
L22	22Ω	55Ω	10-791							Waveform winding - 46Ω

SILVERTONE MODELS 7100, A, AY, AZ, Y, Z, 7101, A, AY, AZ, Y, Z, 7102, 7103, R, S, T, 7110, A, 7111, A, 7113, A, 7126, A, 7127, A (Ch. 528. 50000, 528. 50002, 528. 50010, 528. 50017, 528. 50014, 528. 50020, 528. 50021, 528. 50022, 528. 50030)

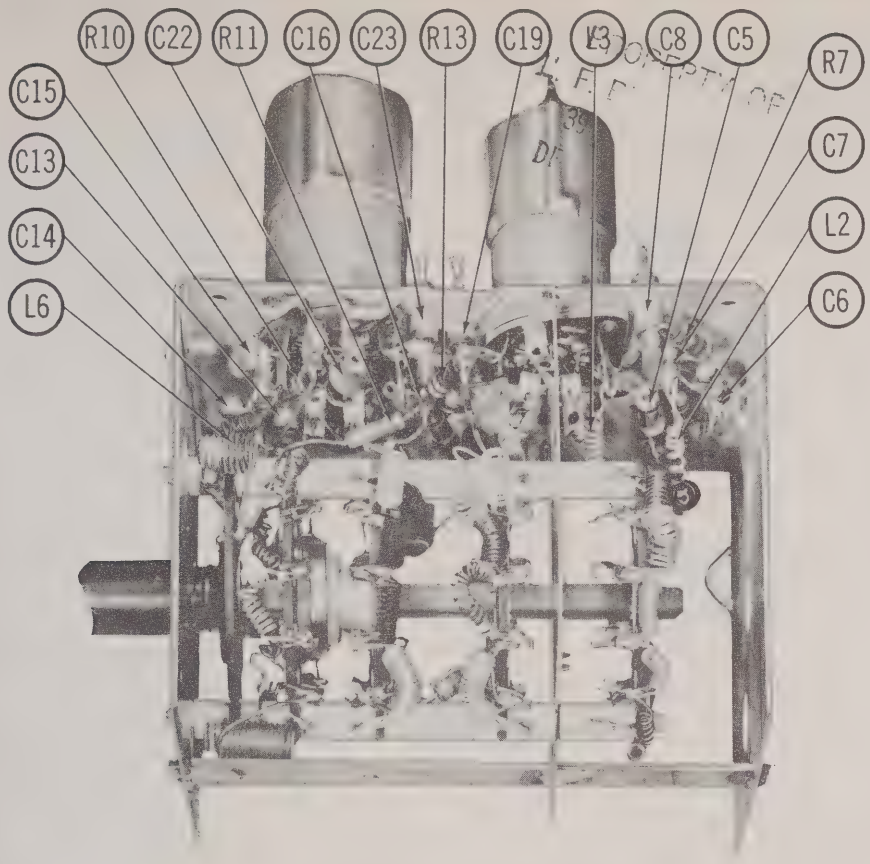
PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

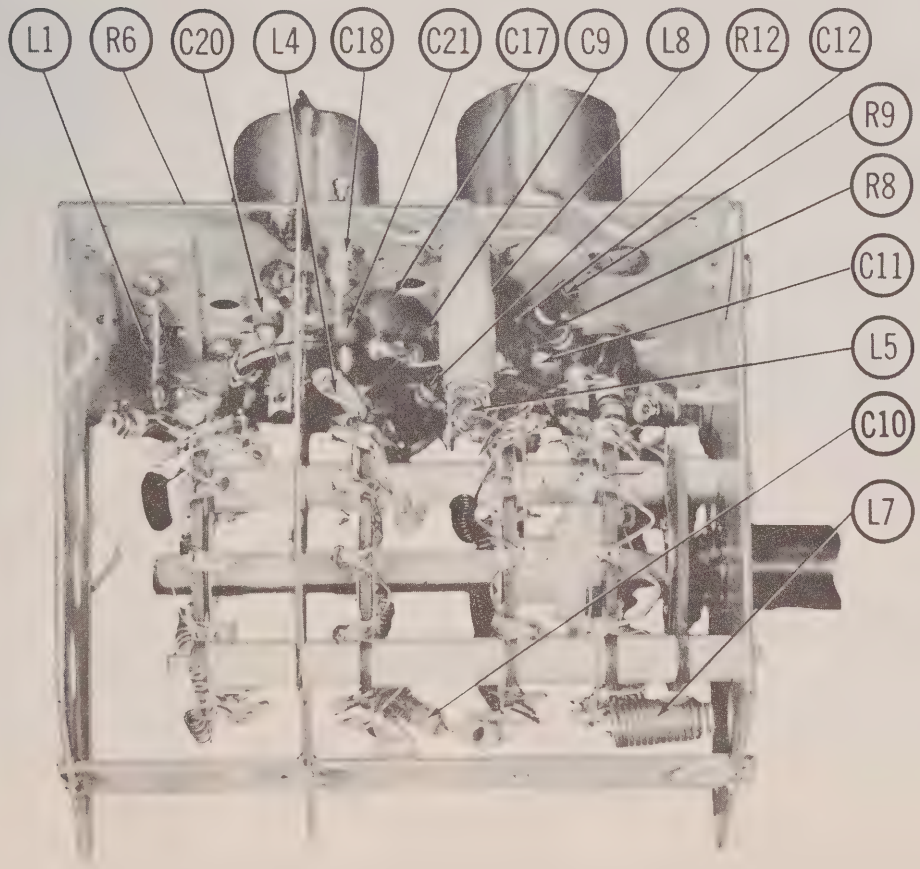
ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	SILVERTONE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.220A	83-829	1236AH	MR300	6S300	6Q4	300	
M2	.220A	83-829	1236AH	MR300	6S300	6Q4	300	

MISCELLANEOUS

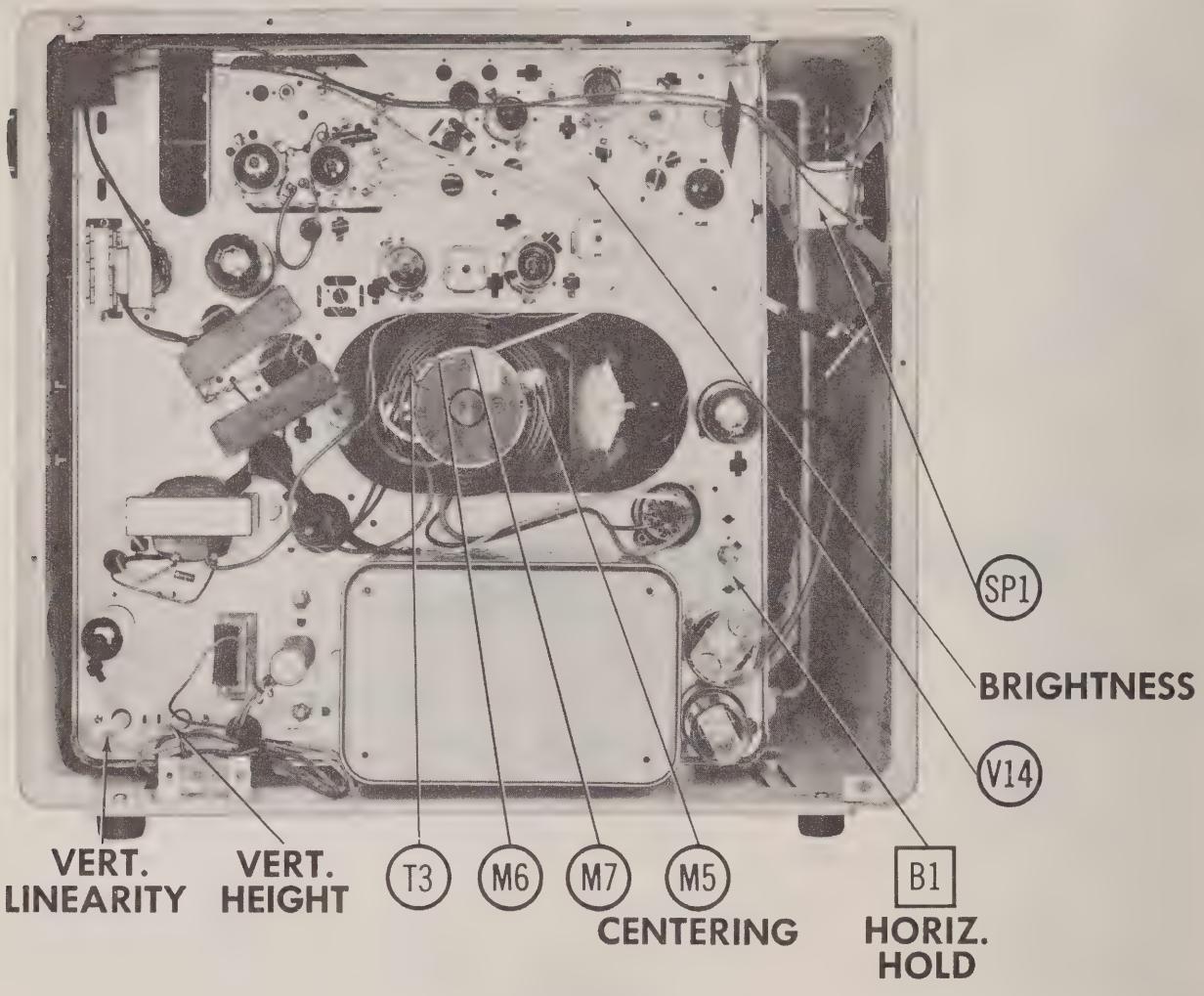
ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Tuner	95-76	VHF, Chassis 528. 50000, 528. 50002.
	Tuner	95-86	VHF, Chassis 528. 50012, 528. 50010, 528. 50014.
M4	Tuner	95-88	UHF, Chassis 528. 50012, 528. 50010, 528. 50014.
M5	Centering Device	83-936	Includes Deflection Yoke (T3), Rear Cover.
M6	Ion Trap	83-830	
M7	Width Device	83-962	
	Cabinet	42-827	Models 7100Y, 7100, 7101Y.
	Cabinet	42-829	Models 7100Z, 7101Z.
	Cabinet	42-820	Models 6144, 6145.
	Cabinet	42-828	Model 7101.
	Cabinet	42-815	Model 7110.
	Cabinet	42-841	Models 7112, 7113.
	Cabinet	42-832	Models 7126, 7127.
	Cabinet	42-830	Model 7111.
	Cabinet	42-876	Models 7113A, 7112A, 7111A.
	Cabinet	42-872	Models 7127A, 7126A.
	Cabinet	42-867	Model 7100A.
	Cabinet	42-875	Model 7110A.
	Cabinet	42-869	Model 7100AZ.
	Cabinet	42-868	Model 7100AY.
	Handle	49-56	Models 7100Y, 7100, 7100Z, 7100AY, 7100AZ, 7101Y, 7101Z.
	Handle	49-66	Models 6145, 7101, 7100A.
	Knob	52-677	VHF Channel Selector - Models 7100, A.
	Knob	52-721	VHF Channel Selector - Models 7100Y, 7100Z, 7100AY, 7100AZ.
	Knob	52-672	VHF Channel Selector - Model 6144.
	Knob	52-671	VHF Channel Selector - Models 7110, A, 7112, A, 7126, A.
	Knob	52-670	VHF Channel Selector - Models 7111AA, 7127A, 7113A.
	Knob	52-720	VHF Channel Selector - Models 7101Y, 7101Z.
	Knob	52-674	VHF Channel Selector - Model 6145.
	Knob	52-678	VHF Channel Selector - Model 7101.
	Knob	52-670	VHF-UHF Channel Selector - Models 7113, 7127.
	Knob	52-682	UHF Channel Selector - Models 7113, 7127.
	Knob	52-680	UHF Channel Selector - Models 7101Y, 7101Z, 6145, 7101.
	Knob	52-673	UHF Channel Indicator Drum - Models 7113, A, 7127, A, 7111, A.
	Knob	52-676	UHF Channel Indicator Drum - Model 7101.
	Knob	52-722	UHF Channel Indicator Drum - Models 7101Y, 7101Z.
	Knob	52-675	UHF Channel Indicator Drum - Model 6145.
	Knob	52-679	VHF Fine Tuning - Model 6144, 7100, A.
	Knob	52-681	VHF Fine Tuning - Models 7110, A, 7112, A, 7126, A.
	Knob	52-665	VHF Fine Tuning - Models 6145, 7101.
	Knob	52-724	VHF Fine Tuning - Models 7101Y, 7101Z.
	Knob	52-682	VHF Fine Tuning - Models 7111, A, 7127A, 7113A.
	Knob	52-666	VHF Fine Tuning - Models 7113, 7127.
	Knob	52-719	VHF Fine Tuning - Models 7100Y, 7100Z, 7100AY, 7100AZ.
	Knob	52-666	UHF Fine Tuning - Model 7111, A, 7127A, 7113A.
	Knob	52-661	On-Off-Volume - Models 7100, A, 6144, 6145, 7101.
	Knob	52-667	On-Off-Volume - Models 7110, A, 7112, A, 7126, A, 7113, A, 7127, A, 7111, A.
	Knob	52-718	On-Off-Volume - Models 7101Y, 7101Z, 7100Y, 7100Z, 7100AY, 7100AZ.
	Knob	52-662	Contrast - Models 7100, A, 6144, 6145, 7101.
	Knob	52-668	Contrast - Models 7110, A, 7112, A, 7126, A, 7113, A, 7127, A, 7111, A.
	Knob	52-717	Contrast - Models 7100Y, 7100Z, 7101Y, 7101Z, 7100AY, 7100AZ.
	Knob	52-663	Vert. Hold & Brightness - Models 6145, 7100, A.
	Knob	52-663	Vert. Hold - Model 7101.
	Knob	52-663	Brightness - Models 7110, 7112, 7126, 7113, 7111.
	Knob	52-669	Vert. Hold - Models 7110, A, 7112, A, 7126, A, 7113, A, 7127, A, 7111, A.
	Knob	52-716	Vert. Hold - Models 7101Z, 7101Y, 7100Y, 7100Z, 7100AY, 7100AZ.
	Knob	52-633	Brightness - Models 7100AY, 7100AZ, 7110A, 7112A.
	Safety Glass	48-113	Models 6144, 6145, 7101, A, 7101Z, 7101Y, 7100, 7100Y, 7100Z, 7100AY, 7100AZ.
	Safety Glass	48-120	Models 7111, A, 7101, A, 7112, A, 7126, A, 7113, A, 7127, A.
	Mask	31-349	Models 7111, A, 7110, A, 7112, A, 7126, A, 7113, A, 7127, A.



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Adjust the horizontal hold slug until the picture synchronizes horizontally. Connect the vertical amplifier of the oscilloscope to point ⟨H⟩ thru a 10MMF capacitor. Connect the low side to chassis. Adjust the horizontal waveform slug (B1) until a waveform similar to Fig. 6 with sharp peaks 10% higher in amplitude than the round peaks.

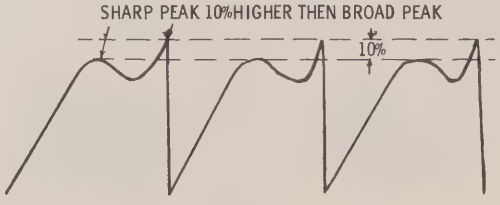


FIG. 6

PHOTOFACT* Folder

*TRADE MARK

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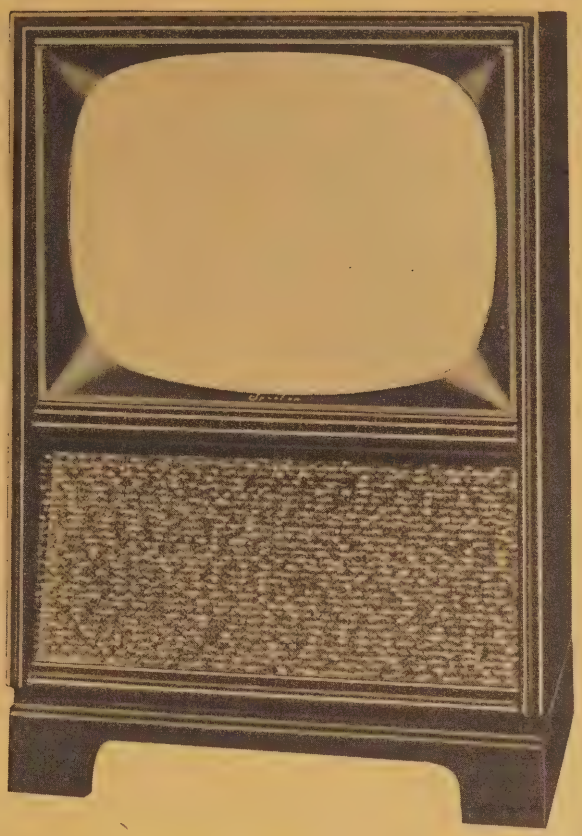

SPARTAN CHASSIS CTA465BB

TRADE NAME	Spartan	CHASSIS
		CMUA465BB, CMUA466BB, CMUA469BB, CMUA473BB, CTA465BB, CTA466BB, CTA469BB, CTA473BB ..... 115 Series
MANUFACTURER	Spartan, Division of The Magnavox Company, Fort Wayne, Indiana	
TYPE SET	Television Receiver	
TUBES	Twenty	
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING 1.61 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13,VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)	

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Tube Placement Chart (Top View) 5

SPARTAN CHASSIS CMUA465BB, CMUA466BB, CMUA469BB, CMUA473BB, CTA465BB, CTA466BB, CTA469BB, CTA473BB (Series 115)

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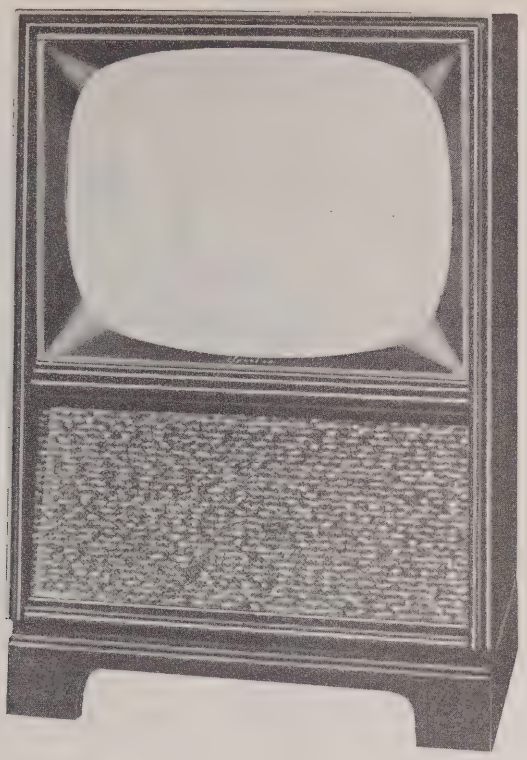

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CHASSIS

CTA465BB ..... 115 Series

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SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

For touch-up adjustments of VHF tuner oscillator adjustments, it is necessary to remove the chassis from the cabinet. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION

See tube placement chart on page 5.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

To adjust the horizontal oscillator, remove the rear cover and supply power to the chassis. Set the horizontal hold control to its mid-range position and adjust the horizontal frequency coil (L20) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the discriminator secondary (L19) located on tube side of chassis.

FUSES

One fuse is used for horizontal sweep circuit protection. (For location see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

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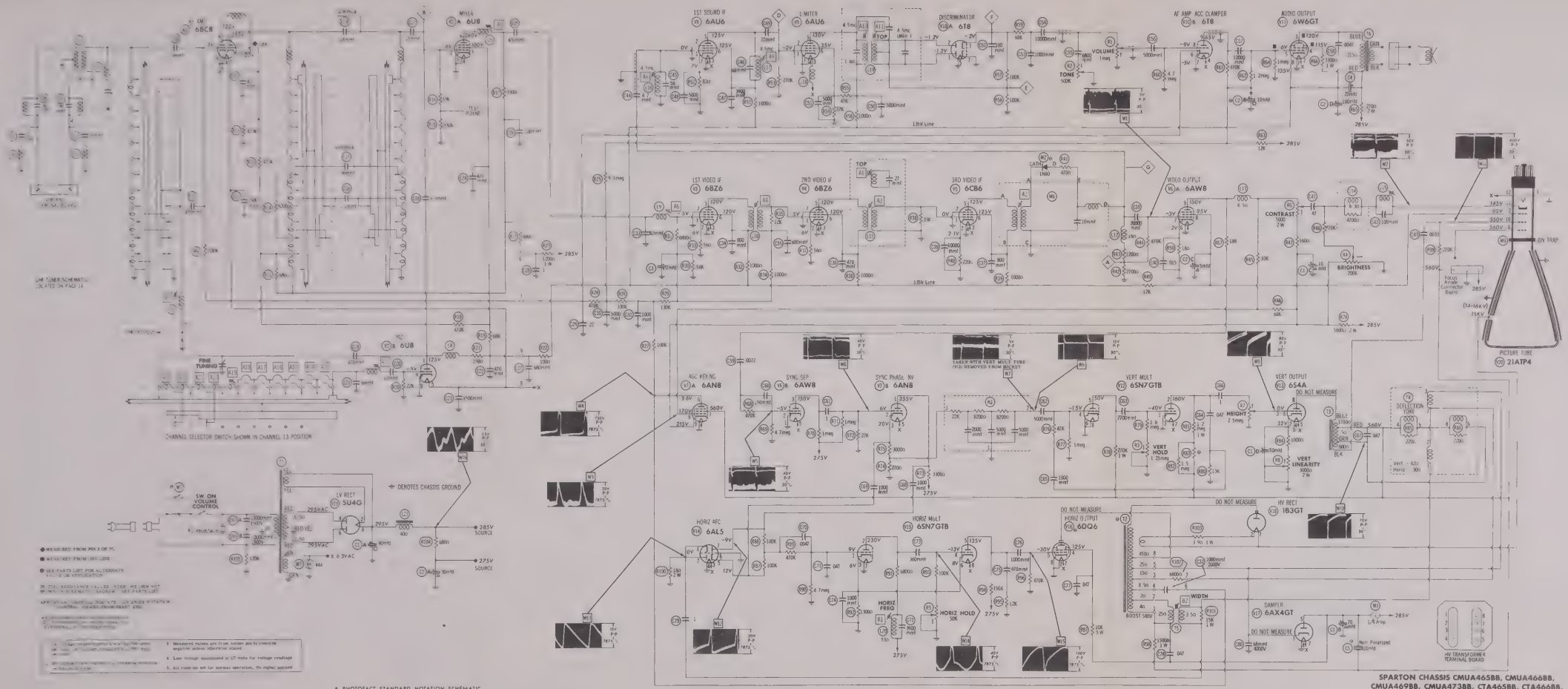
G669

DATE 12-56 SET 339 FOLDER 14



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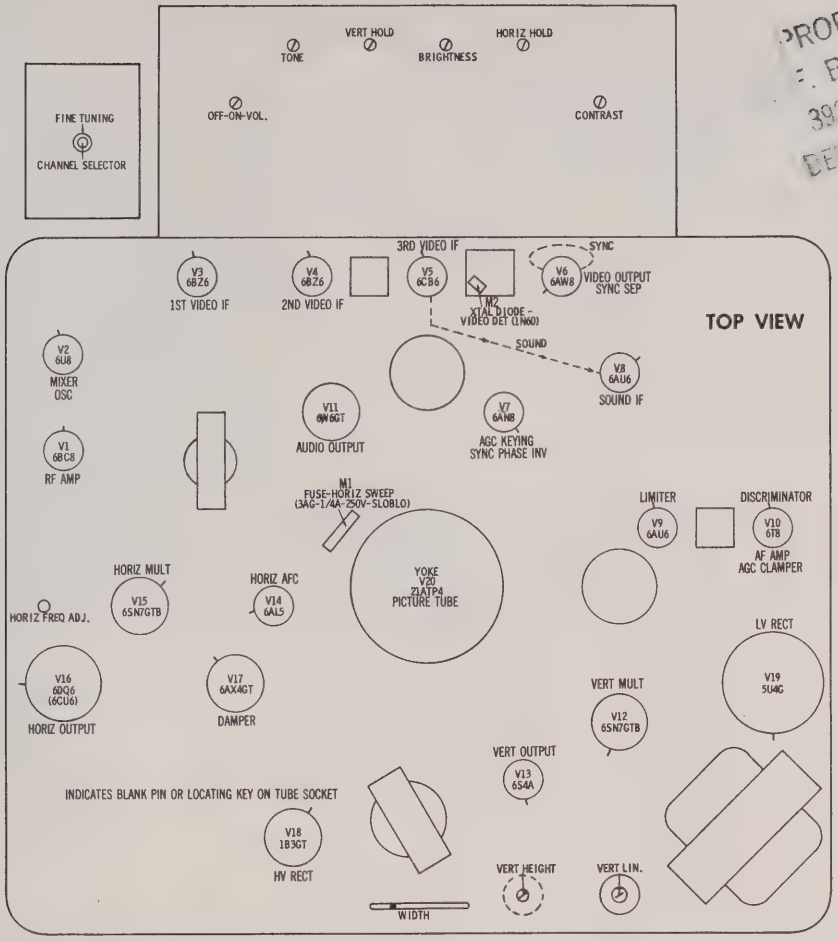
CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

TUBE PLACEMENT CHART



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TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V19

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V11
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V7, V20
Has pic, no sound - V8, V9, V10, V11
Overloaded picture - V7, V10

SYNC FAILURE
No vert. sync - V7, V12
No horiz. sync - V7, V14, V15
No vert. or horiz. sync - V6, V7

SWEEP FAILURE
No raster, has sound - V15, V16, V17, V18, V20, Fuse (M1)
No vertical deflection - V12, V13
Poor vert. linearity or foldover - V12, V13
Poor horiz. linearity or foldover - V15, V16, V17
Narrow picture - V15, V16, V17, V18, V19
Vert. off freq. - V7, V12
Horiz. off freq. - V7, V14, V15

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped away from the chassis. Do not remove the horizontal multivibrator tube (V15) to disable the high voltage.

VIDEO IF ALIGNMENT

Connect the negative lead of a 1.5 volt battery to the ungrounded side of C29, connect the positive lead to chassis.
Connect the negative lead of a 3 volt battery to the ungrounded side of C3. Connect the positive lead to chassis. If available, single tapped 4.5 volt battery may be used.
In step 1 it is possible to obtain two settings of A1 at which maximum attenuation will occur. Correct adjustment will be obtained when 47.25MC marker is centered in the trap and the core is farthest out of the coil.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to pin 1 (grid) of 6BZ6 (V3). Low side to chassis.	43.0MC (10MC Swp)	47.25MC	Any unused high band channel	Vert. Amp. thru 10K to point (A). Low side to chassis.	A1	Couple a second generator to point (B) to provide markers. Adjust to center 47.25MC marker in trap notch as in Fig. 1. Use enough sweep output so that the trap notch is visible on the scope.
2.	"	"	"	42.75MC 45.0MC 45.75MC 47.25MC	"	"	A2, A3, A4	Attenuate sweep generator output for 2 volt peak to peak on scope. Adjust for response similar to Fig. 1. Adjust A2 for maximum gain and MINIMUM tilt. A3 positions 45.75MC marker. Recheck A1 adjustment for correct 47.25MC position. See Fig. 1.
3.	"	High side to point (B). Low side to chassis.	"	"	"	"	A5, A6	Adjust A5 for maximum gain and to place 45.75MC marker at 50% on response curve as in Fig. 2. Adjust A6 for maximum amplitude and correct tilt. Repeat adjustments of A5 and A6 (if necessary) several times to obtain response within limits in Fig. 2.
4.	Fig.3	Thru matching network (Fig.3) to VHF antenna terminals.	213MC (10MC Swp)	42.75MC 45.0MC 45.75MC 47.25MC	13	Vert. Amp. thru 10K to point (A). Low side to chassis.		Couple marker generaator loosely to pin 1 (grid) of 6BZ6 (V3). Check for response similar to Fig. 2 on all VHF channels. Response should within limits shown by dotted lines. If necessary, repeat steps 1 thru 4.
			207MC (10MC Swp)		12			
			201MC (10MC Swp)		11			
			195MC (10MC Swp)		10			
			189MC (10MC Swp)		9			
			183MC (10MC Swp)		8			
			177MC (10MC Swp)		7			
			85MC (10MC Swp)		6			
			79MC (10MC Swp)		5			
			69MC (10MC Swp)		4			
			63MC (10MC Swp)		3			
			57MC (10MC Swp)		2			
5.	1000Ω Carbon Resistor	High side to point (C) thru 1000Ω. Low side to chassis.	43MC (10MC Swp)	45.75MC	UHF	Vert. Amp. thru 10K to point (A). Low side to chassis.	A7	Turn tuner to UHF position. Adjust A7 to place 45.75MC marker at 50% on high frequency slope of response curve (Fig.2).

SOUND IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.005MFD	High side to point (G). Low side to chassis.	4.5MC (Unmod)	Any unused channel	DC probe thru 10K to point (E). Common to chassis.	A8, A9, A10	Adjust for maximum output. Keep input signal at lowest point possible for an accurate indication.
7.	"	"	"	"	DC probe thru 10K to point (F). Common to chassis.	All	Adjust for MINIMUM deflection. A positive and negative reading will be obtained on either side of the correct setting.

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ALIGNMENT INSTRUCTIONS (cont)

VHF OSCILLATOR ALIGNMENT

Loosely couple an RF signal generator to the grid of the first video IF amplifier tube (V3) and tune it accurately to 45.75MC. Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Fig. 3	Thru matching network (Fig. 3) to antenna terminals.	213MC (10MC Swp)	211.25MC 45.75MC	13	Vert. Amp. thru 10K to point (A). Low side to chassis.	A12	Adjust so that video RF and video IF markers coincide on response curve.
9.	"	"	207MC (10MC Swp)	205.25MC 45.75MC	12	"	A13	Adjust position of loops so that video RF and video IF markers coincide on response curve.
			201MC (10MC Swp)	199.25MC 45.75MC	11		A14	
			195MC (10MC Swp)	193.25MC 45.75MC	10		A15	
			189MC (10MC Swp)	187.25MC 45.75MC	9		A16	
			183MC (10MC Swp)	181.25MC 45.75MC	8		A17	
			177MC (10MC Swp)	175.25MC 45.75MC	7		A18	
10.	"	"	85MC (10MC Swp)	83.25MC 45.75MC	6		A19	Adjust so that video RF and video IF markers coincide on response curve.
11.	"	"	79MC (10MC Swp)	77.25MC 45.75MC	5	"	A20	Adjust (compress or expand coil turns) so that video RF and video IF markers coincide on response curve.
			69MC (10MC Swp)	67.25MC 45.75MC	4		A21	
			63MC (10MC Swp)	61.25MC 45.75MC	3		A22	
			57MC (10MC Swp)	55.25MC 45.75MC	2		A23	

RF AND MIXER ALIGNMENT

The RF and mixer portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion of the receiver should not be required in the field.

UHF TUNER ALIGNMENT

The UHF portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion of the receiver is not recommended in the field.

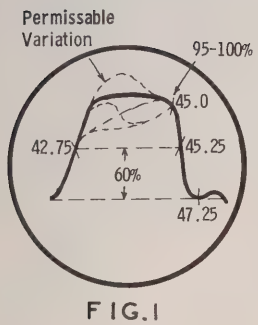


FIG. 1

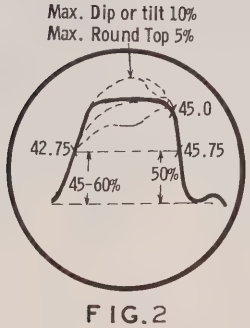


FIG. 2

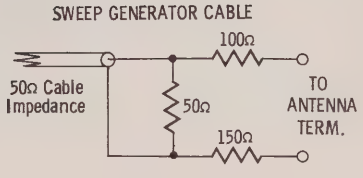
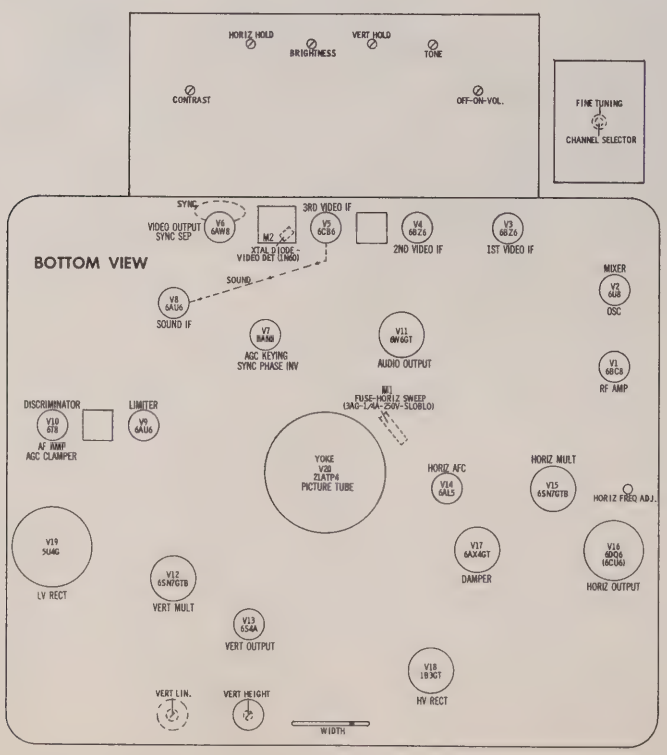


FIG. 3

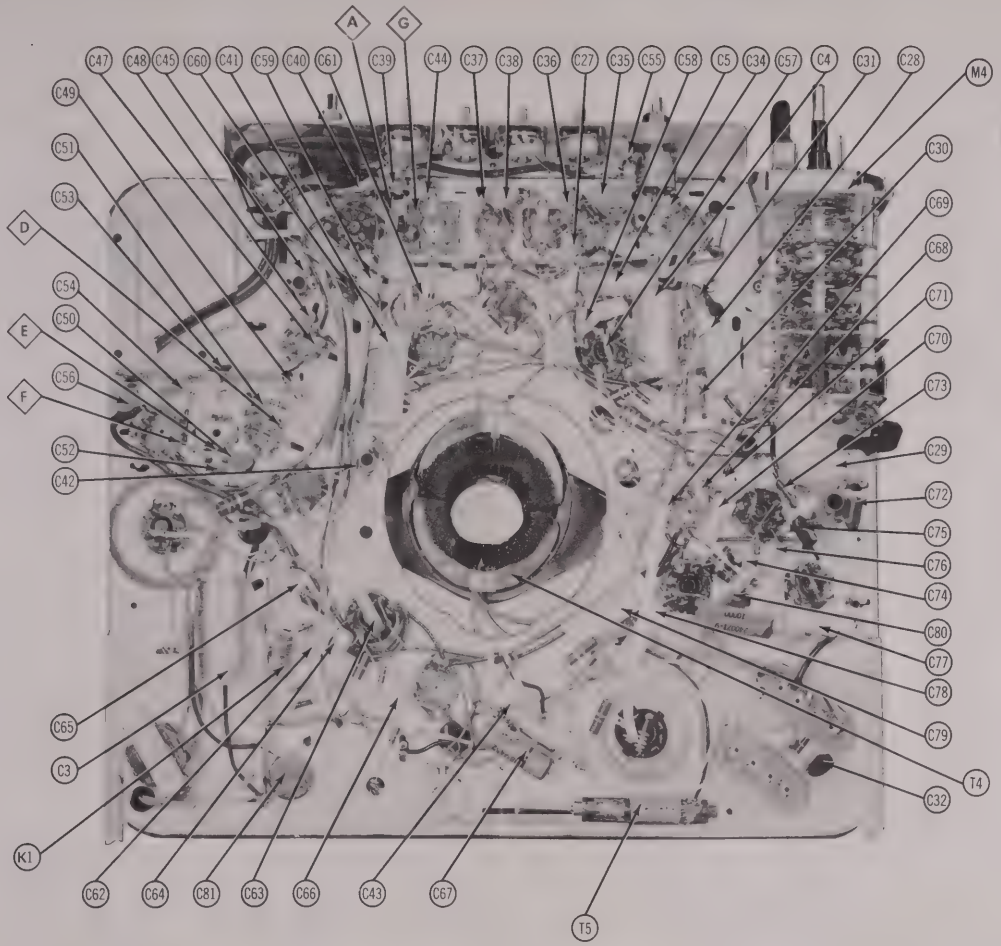
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BC8	†1900Ω	250K	INF	0Ω	.1Ω	INF	1Meg	0Ω	0Ω
V2	6U8	■ 250Ω	360K	■ 50K	0Ω	.1Ω	†5200Ω	0Ω	0Ω	22K
V3	6BZ6	60K	56Ω	.1Ω	0Ω	■ 1000Ω	■ 1000Ω	0Ω		
V4	6BZ6	60K	56Ω	.1Ω	0Ω	■ 1000Ω	■ 1000Ω	0Ω		
V5	6CB6	.1Ω	220Ω	.1Ω	0Ω	■ 1000Ω	■ 1000Ω	0Ω		
V6	6AW8	0Ω	4.7Meg	†1Meg	0Ω	.1Ω	18Ω	470K	■ 12K	†10K
V7	6AN8	†4000Ω	22K	3300Ω	0Ω	.1Ω	280K	*1500Ω	†30K	†5600Ω
V8	6AU6	.5Ω	0Ω	.1Ω	0Ω	■1000Ω	■1000Ω	82Ω		
V9	6AU6	270K	0Ω	.1Ω	0Ω	■ 1000Ω	■ 40K	0Ω		
V10	6T8	100K	100K	200K	.1Ω	0Ω	1Meg	0Ω	4.7Meg	†470K
V11	6W6GT	TP	.1Ω	†530Ω	†3600Ω	550K	TP	0Ω	50K	
V12	6SN7GTB	● 2Meg	*1.6Meg	0Ω	1Meg	*270K	0Ω	.1Ω	0Ω	
V13	6S4A	NC	● 2500Ω	● 1.6Meg	0Ω	.1Ω	● 1.6Meg	NC	NC	*3300Ω
V14	6AL5	18Ω	18Ω	.1Ω	0Ω	5Meg	0Ω	5Meg		
V15	6SN7GTB	4.7Meg	†7500Ω	1300Ω	● 100K	†150K	1300Ω	0Ω	.1Ω	
V16	6DQ6	NC	0Ω	NC	†10K	470K	TP	.1Ω	0Ω	TOP CAP *25Ω
V17	6AX4GT	NC	NC	4.5Meg	NC	†48Ω	NC	.1Ω	0Ω	
V18	1B3GT		PINS	1 - 8	HAVE	INF	RESISTANCE			TOP CAP *475Ω
V19	5U4G	NC	60K	NC	2Ω	NC	23Ω	TP	60K	
V20	21ATP4	.1Ω	■ 12K	PIN 6 *1500Ω	PIN 10 *270K	PIN 11 ‡470K	PIN 12 0Ω			

† MEASURED FROM PIN 8 OF V19.
■ MEASURED FROM 135V LINE.
* MEASURED FROM PIN 3 OF V17.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
NC NO CONNECTION.
TP TIE POINT.

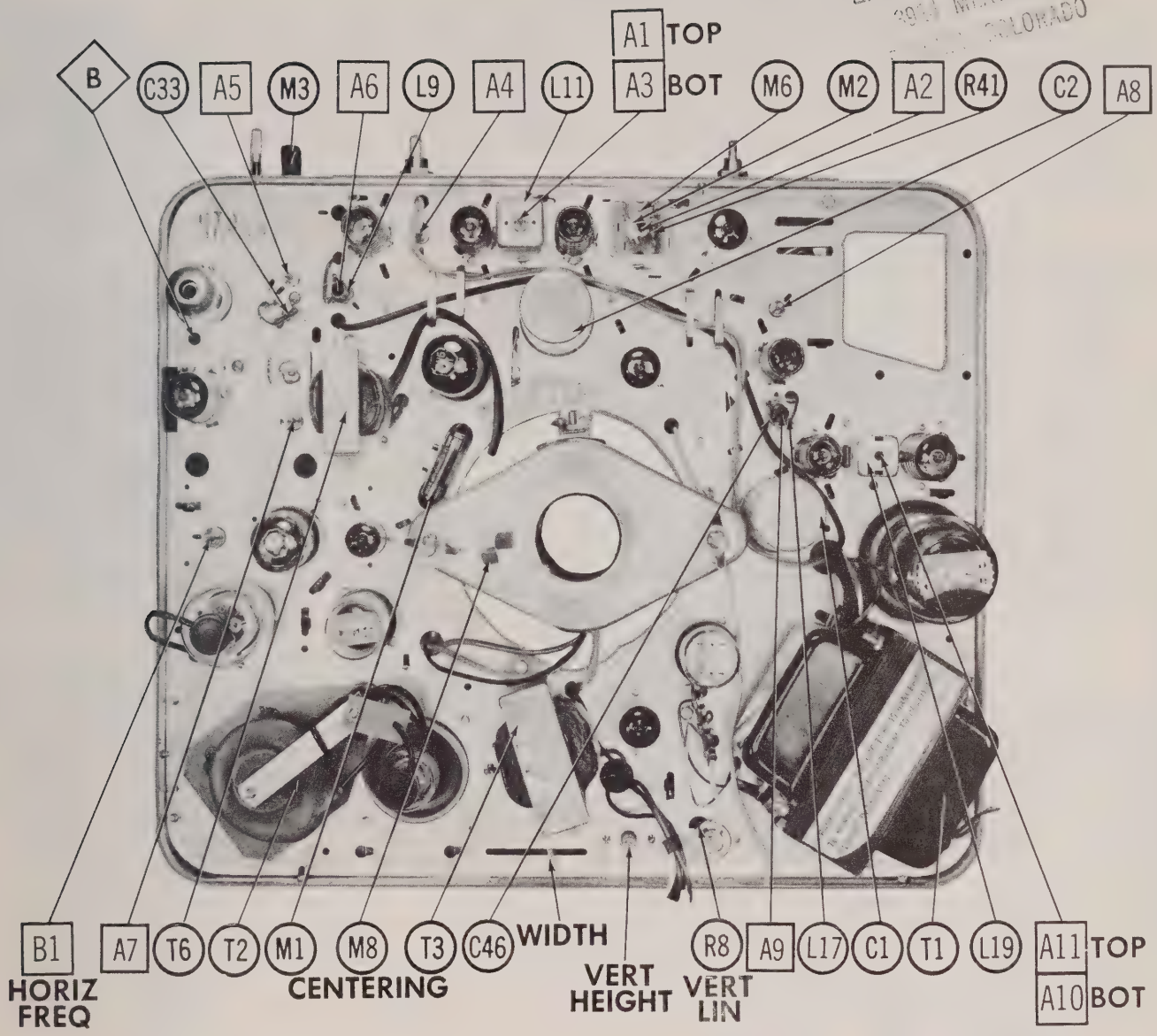


TUBE PLACEMENT CHART



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

PROPERTY OF
L. F. BLANKENSHIP
2954 MEADE ST.
COLORADO



CHASSIS—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set the horizontal hold control to its mid-range position.

Turn the horizontal frequency slug (B1) slowly clockwise while switching off and on channel until picture just loses sync. Turn B1 counter clockwise until picture just pulls into sync, then turn B1 an additional half-turn counter clockwise.

The picture should hold sync at both extreme ends of the horizontal hold control.

If necessary, readjust B1 slightly and test for sync and pull-in as above.

Adjust the width slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally.

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	RF Amplifier	6BC8	
V2	1st Video IF Amplifier	6U8	
V3	2nd Video IF Amplifier	6BZ8	
V4	3rd Video IF Amplifier	6BZ8	
V5	3rd Video IF Amplifier	6CB6	
V6	Video Output-Sync Sep	6AW8	
V7	AGC Keying-Sync Phase Dr	6AN8	
V8	Sound IF Amplifier	6AU8	
V9	Limiter	6AU8	
V10	Disc.-AF Amplifier-AGC Clamper	6T8	
V11	Audio Output	6W6GT	
V12	Vert. Multi	6SN7GTB	
V13	Vert. Output	6K6A	
V14	Horiz. AFC	6AL5	
V15	Horiz. Multi	6SN7GTB	
V16	Horiz. Output	6DQ6	Note 1
V17	Damper	6AX4GT	
V18	HV Rectifier	1B3GT	
V19	LV Rectifier	6U4GA	

Note 1: 6CU6 may be used in some versions.

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	SPARTAN PART No.	CBS PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	
V20	21A7P4	21A7P4 ③	21A7P4 21A7P4A ½	21A7P4 ② 21A7P4A ½	① Aluminized ② Silver screen "85"

ELECTROLYTIC CAPACITORS

ITEM No	RATING CAP	VOLT	REPLACEMENT DATA SPARTAN PART No	AEROVOX PART No	CORNELL DUBILIER PART No	MALLORY PART No	PYRAMID PART No	SANGAMO PART No	SPRAGUE PART No
C1A	●40	350	370081-53	RE1008		FP375 ⑤		T-110	
B	●70	350				TC82		MT-0650	
C	●20	350							
D	50	50				FP385		T-785	
C3A	●30	350	370081-57	AFH4-56		TC86		MT-28100	
B	●10	350	(Note 1)	-93-4					
C	●5	350							
D	100	300							
C5	2	50	370027-22	PR850Y3	BBR2-50	TC302	TD-2-50	MT-0503	TVA-1301
C4	20	150	370027-20	PR8450Y20	BR2035	TC65	TD-20-350	FM-4520	TVA-1608
C6	10	350or	370027-26 (Note 3)	PR8350Y10		TC65 ⑦		MT-4520 ⑦	

† Connect negative leads together.
Note 1: Not used in some versions.
Note 2: Non-polarized unit.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING CAP	VOLT	REPLACEMENT DATA SPARTAN PART No	AEROVOX PART No	CENTRALAB PART No	CORNELL DUBILIER PART No	ERIE PART No	MALLORY PART No	SPRAGUE PART No	NOTES
C6	15		250207-4	NPO-S1I5	DE-150	TZU	ED-15		5TCC-Q15	
C7	30		250207-8	NPO-S1I5	DE-150	TZU	ED-15		5TCC-Q15	
C8	39		250175-20	N750-S1J9	TCN-39	N031	TC1-39			
C9	39		250175-20	N750-S1J9	TCN-39	N031	TC1-39			
C10	20		250221-127	NPO-S1I0	DE-200	TZ09	ED-15	5T-541	5TCC-Q1	
C11	470		250175-4	BPD-00047	DD-471	K060	ED-470	UC-5347	5GA-T47	
C12	470		250175-8	BPD-00047	DD-471	K060	ED-470	UC-5347	5GA-T47	
C13	1500		250175-10	BPD-0015	DD-152	K071	ED-1500	DC-5315	5HX-D15	
C14	18		250324-4							
C15	36									
C16	.3		250221-117							
C17	15		250207-5	NPO-S1I5	DE-150	TZU	ED-15		5TCC-Q15	
C18	0.3		250221-121	NPO-S1I.3	TCZ-3R3	TZ06	TC0-3.3	ZT-5533	5TCCB-V33	
C19	470		250175-4	BPD-00047	DD-471	K060	ED-470	UC-5347	5GA-T47	
C20	10		250089-138	N750-S1I0	TCN-10	TN01	TC1-10	NT-541	5TCU-Q1	
C21	9		250068-137							
C22	470		250175-8	BPD-00047	DD-471	K060	ED-470	UC-5347	5GA-T47	
C23	1500		250175-10	BPD-0015	DD-152	K071	ED-1500	DC-5315	5HX-D15	
C24	470		250175-8	BPD-00047	DD-471	K060	ED-470	UC-5347	5GA-T47	
C25	470		250175-8	BPD-00047	DD-471	K060	ED-470	UC-5347	5GA-T47	
C26	100				TCA-100		TC3-100			
C27	680		250218-4	DI-00068	DD-681	G065	ED-680	UC-5368	5GA-T68	
C28	.68		250221-13	P4881N-1	DP-204	CUB4P1		PT401	5TM-P1	
C29	.22	300	250303-15	P381N-22		CUB2P22		PT4022	5TM-P22	
C30	5000		250175-20	BPD-005	DD-502	K080	ED-005	DC-525	5HX-D5	
C31	1000		250175-26	BPD-001	DD-102	K069	ED-001	DC-521	5HX-D1	
C32	1000	3000	250175-27	HVD-15-1000	DD36-102	V1D1	3KV-103	DC-3021	20GA-D1	
C33	1500	500	250228-328	149-00082	TCZ-82	125NS82	TC0-82		MI-482	
C34	800		250218-14	DI-0008	DD-801	G067	ED-0008	MC251	5GA-T8	
C35	680		250218-4	DI-00068	DD-681	G065	ED-680	DC-5368	5GA-T68	
C36	470		250218-15	DI-00047	DD-471	G060	ED-470	UC-5347	5GA-T47	
C37	800		250218-14	DI-0008	DD-801	G067	ED-0008	MC251	5GA-T8	
C38	10000		BPD-01	BPD-01	DD-103	K082	ED-01	DC-531	5HX-d1	
C39	20000		250175-7	BPD-03	DD-303	K085	ED-03		5HX-S3	
C40	015	300	250213-4	DD05-153	CUBB15			PT1515	5TM-d15	
C41	.01	300	250202-17	P381N-47		CUB3P47		PT347	5TM-P47	
C42	100			N750-D1100	TCN-100	N043	TC1-100	NT-531	5TCU-T1	
C43	.0033	600	250201-4	DI-0033	DH-332	CUBD33	GP-3300	PT3233	5TM-D33	
C44	4.7		250221-123	NP0-S1H 7	TCZ-4R7	TZ07	TC0-4 7		2T-5547	5TCCB-V47
C45	.56		250218-23	N750-S1H6	TCN-56	N056	TC1-56			
C46	68		250218-7	N750-D1H8	TCN-68	N038	TC1-68		5TCU-Q68	
C47	3900		250175-31	BPD-004	DD-402	K078	ED-004	UC-5340	5GA-D39	
C48	5000		250175-1	BPD-005	DD-502	K080	ED-005	DC-525	5HX-D5	
C49	33		250207-43	EH33	DE-330	TP33	GP-33	UC-5432	5GA-Q33	
C50	5000		250175-1	BPD-005	DD-502	K080	ED-005	DC-525	5HX-D5	
C51	5000		250175-1	BPD-005	DD-502	K080	ED-005	DC-525	5HX-D5	
C52	1500		250207-45	EJ100	DE-101	TP34	GP-100	UC-531	5GA-Q1	
C53	1000		250218-8	DI-001	DD-102	G069	ED-102	UC-531	5GA-D1	
C54	10000		250175-6	BPD-01	DD-103	K082	ED-01	DC-531	5HX-S1	
C55	8500		250175-30	BPD-0085	DD-852	K081	ED-0085		5HX-D85	
C56	5000		250175-1	BPD-005	DD-502	K080	ED-005	DC-525	5HX-D5	
C57	10000		250175-6	BPD-01	DD-103	K082	ED-01	DC-531	5HX-S1	
C58	.0047	600	250201-5	BPD-0047	DD-472	CUBD47	GP-4700	PT5247	5TM-D47	
C59	.0033	600	250201-3	BPD-0033	DE-332	CUBD33	GP-3300	PT3233	5TM-D33	
C60	150	500	250228-534	EJ150	DE-151	TP35	GP-150	MC326	1FM-J15	
C61	1	400	250211-13	P488N-1	DP-104	CUB4P1		PT401	4TM-P1	
C62	5000		250218-15	1464-005		IDB5D5		MC5405	MS-J5	
C63	3700	500	250180-1046	1464-0037		IRSD37			MS-J37	
C64	.047	400	250213-7							
C65	1000		250218-6	1464-001		IRSD1	ED-1000	MC3255	MS-J1	
C66	1	400	250211-13	P488N-1	DP-104	CUB4P1		PT401	4TM-P1	
C67	.047	400	250211-11	BPD-05	DP-503	CUB4P47		PT4547	4TM-P47	
C68	1000		250218-6	1464-001		IRSD1	ED-1000	MC3255	MS-J1	
C69	1000		250218-6	1464-001		IRSD1	ED-1000	MC3255	MS-J1	
C70	.0047	400	250213-6	1464-0047		IRSD47			MS-J47	

PARTS LIST AND DESCRIPTIONS (cont)

CAPACITORS (cont)

ITEM No	RATING CAP	VOLT	REPLACEMENT DATA SPARTAN PART No	AEROVOX PART No	CENTRALAB PART No	CORNELL-DUBILIER PART No	ERIE PART No	MALLORY PART No	SPRAGUE PART No	NOTES
C71	047	200	250228-468	1464-0047		1RSD39			MS-J39	
C72	3300	500	250228-468	1464-0033		5HS136			MS-J36	
C73	360	500	250228-343	1464-0036		1RSD1	ED-1000	MC8255	MS-J1	
C74	1000		250218-8	1464-001		1RSD47	ED-470		MS-J47	
C75	470	500	250228-346	1464-00047	DE-471	G069	ED-1000	MC255	5GA-D1	
C76	1000		250218-8	DI-001	DD-102	CUB4P47		PT4547	4TM-P47	
C77	.047	400	250211-11	BPD-05	DP-503	CUB4P47		PT4547	4TM-P47	
C78	047	400	250211-13	BPD-08	DP-503	CUB6P1		PT601	6TM-P1	
C79		600	250201-13	P688N-1	DP-104	CUB6P1				
C80	8?	4000	250175-33	BVD-60-68				PT1615	MB-61	
C81A	10000	1500	250219-3	P1888N-01	DD16-103	CUB15B1		PT1615	MB-61	
C81B	10000	1500		P1888N-01	DD16-103	CUB15B1		PT1615	MB-61	

CONTROLS

ITEM No	RATING RESISTANCE	WATTS	REPLACEMENT DATA SPARTAN PART No	CENTRALAB PART No	CLAROSTAT PART No	IRC PART No	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	220126-46	B-10-S	A47-1Meg-Z	Q13-157	U53	Volume control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	Not Req.	SWR-12	Not Req.	Not Req.	Attach to R1A
R2A	500K	½	D220132-4	BX59	A47-500K-Z	Q13-133	TA54A	Tone control
B	Shaft		Not Req.	Not Req.	FS2-1/8	Not Req.	TA350L	Attach to R2A
R3A	1.25Meg	½	D220133-3	BX-747	A47-1.5Meg -6	Q11-138	TA350L	Vert. Hold
B	Shaft		Not Req.	Not Req.	FKB-1/8	Not Req.	Not Req.	Attach to R3A
R4A	200K	½	D220132-2	BX-46	A47-200K-S	Q11-139	TA354L	Brightness control
B	Shaft		Not Req.	Not Req.	FS2-1/8	Not Req.	Not Req.	Attach to R4A
R5A	50K	½	D220138-7		A47-50K-S	Q11-133	TA54L	Horiz. Hold
B	Shaft		Not Req.	Not Req.	*RS-3	VQ	Not Req.	Attach to R5A
R6A	5000Ω	2	220133-1	V-135	A47-5000	WPK-5000	R-5000L	Contrast control - wire wound
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	DB-38	Attach to R6A
R7A	2.5Meg	½	D220146-3	BX-83	A47-2.5Meg -S	Q11-159	TA355L	Height
B	Shaft		Not Req.	Not Req.	FKB-1/8	RQ	Not Req.	Attach to R7A
R8	3000	2	220120-3		39-3000		FL-4K	Vert. Linearity

* Clarostat RSB (RS-3) flat shaft to desired size after cutting off to length to be used.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	WATT	REPLACEMENT DATA SPARTAN PART No.	IRC PART No.	NOTES
R9	100Ω		220104-96	BTS-100K	
R10	470K		220104-94	BTS-470K	
R11	470K		220104-94	BTS-470K	
R12	680Ω		220104-60	BTS-680	
R13	680Ω		220104-60	BTS-680	
R14	1000Ω		220104-62	BTS-1000	
R15	330K		220104-92	BTS-330K	
R16	33K		220104-80	BTS-33K	
R17	3300Ω		220104-66	BTS-3300	
R18	470K		220104-94	BTS-470K	
R19	18K		220104-84	BTS-18K	
R20	22K		220104-78	BTS-22K	
R21	100Ω		220104-52	BTS-100	
R22	100Ω		220104-52	BTS-100	
R23	1200Ω	1	220103-63	BTA-1200	
R24	470K		220104-94	BTS-470K	
R25	9.1Meg		220094-254	BTS-9.1Meg 5%	
R26	330K	½	220104-310	BTS-330K ½W	
R27	100K	½	220094-307	BTS-100K ½W	
R28	6800Ω	3	220104-72	BTS-6800	
R29	180K	½	220104-88		
R30	56K	½	220094-201	BTA-56K ½W	
R31	68001	½	220094-179		
R32	1000Ω		220104-62	BTS-1000	
R33	56Ω		220104-47	BTS-56	
R34	1000Ω		220104-62	BTS-1000	
R35	22K	½	220094-225		
R36	1000Ω		220104-62	BTS-1000	
R37	56Ω		220104-47	BTS-56	
R38	33K		220104-82	BTS-1000	
R39	1000Ω		220104-62	BTS-1000	
R40	220Ω		220104-54	BTS-220	
R41	470Ω		220104-179	BTS-470	
R42	3700Ω	5%	220094-168	BTS-3700 5%	
R43	1200Ω	5%		BTS-1200 5%	
R44	470K		220104-94	BTS-470K	
R45	33K		220104-80	BTS-33K	
R46	56K		220104-84	BTS-56K	
R47	560Ω		220104-58	BTS-560	
R48	470K		220104-94	BTS-470K	
R49	33K	5%	220104-78	BTS-33K 5%	
R50	180	5%		BTS-18 5%	
R51	1000Ω		220104-62	BTS-1000	
R52	82Ω		220104-49	BTS-82	
R53	270K		220104-91	BTS-270K	
R54	33K		220104-78	BTS-33K	
R55	47K		220104-82	BTS-47K	
R56	1000Ω		220104-62	BTS-1000	
R57	100K		220104-86	BTS-100K	

ITEM No.	RATING OHMS	WATT	REPLACEMENT DATA SPARTAN PART No.	IRC PART No.	NOTES
R58	100K		220104-96	BTS-100K	
R59	68K		220104-84	BTS-68K	
R60	4.7Meg		220104-96	BTS-4.7Meg	
R61	470K		220104-94	BTS-470K	
R62	1.2Meg	5%	220094-233	BTS-1.2Meg 5%	
R63	12K		220104-76	BTS-12K	
R64	1Meg	5%	220094-231	BTS-1Meg 5%	
R65	370Ω	3	220105-68	BTA-370	
R66	3300Ω	1	220105-66	BTA-3300	
R67	18K		220104-77	BTS-18K	
R68	470K		220104-94	BTS-470K	
R69	4.7Meg		220104-96	BTS-4.7Meg	
R70	1Meg		220104-90	BTS-1Meg	
R71	15K		220104-80	BTS-15K	
R72	22K		220104-78	BTS-22K	
R73	33001 %		220094-171	BTA-3300 1%	
R74	2701 %		220094-125	BTA-270 1%	
R75	30001 %		220094-170	BTA-3000 1%	
R76	47K		220104-93	BTS-47K	
R77	1Meg		220104-98	BTS-1Meg	
R78	370K	1	220105-91	BTA-370K	
R79	1.6Meg	5%	220094-236	BTS-1.6Meg 5%	
R80	13K	5%	220094-188	BTS-13K	
R81	1.2Meg	1	220105-89	BTA-1.2Meg	
R82	1.5Meg		220104-100	BTS-1.5Meg	
R83			220130-1		
R84	1000Ω		220104-62	BTS-1000	
R85	220Ω		220104-54		
R86	220Ω		220104-54		
R87	100K		220104-96	BTS-100K	
R88	100K		220104-86	BTS-100K	
R89	470K		220104-94	BTS-470K	
R90	4.7Meg		220104-96		
R91	68001 %		220094-178	BTS-6800 1%	
R92	1200Ω 5%		220094-231		
R93	100K 5%		220094-207		
R94	150K 5%		220094-211		
R95	12K		220104-75		
R96	470K		220104-94	BTS-470K	
R97	10K	5	220071-9	BWD-10K	
R98	1500Ω	1	220105-64		
R99	470K		220104-94	BTS-470K	
R100	18Ω	3	220106-61		
R101	15K	1	220105-76		
R102	68001		220094-72		
R103	3.9Ω	1	220105-3		
R104	680Ω		220104-60	BTS-680	
R105	120K		3301G-1	BTS-120K	

* Special temp. compensation resistor.

TRANSFORMER (POWER)

ITEM No.	RATING	REPLACEMENT DATA SPARTAN PART No.	Halloreson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
	PRI. SEC. 1 SEC. 2 SEC. 3						
T1	117VAC 585VCT 5VAC 6.3VAC ①1.61A ②.220A ③ 3A ④0.3A	300077-1	P9733 ①	P-3058 ②		28R6B ③	

① Fabricate new mounting.
② Taps 6.3V ② 4.5A winding.
③ Taps 6.3V ② 1.5A winding.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA SPARTAN PART No	Halldorson PART No	Merit PART No	RCA TYPE No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No
T2	Horiz. Output Trans.	360623					A-8295 *	FLY-T9 *	
T3	Vert. Output Trans.	360623-1 ①	DF80T ①	MDF-02 ①	324D1 ①	T90F18/49	A-303 DT-18A ①	T-18 ①	Y-41-1 ①
T4A	Horiz (90°) Horiz. (21MC)	360621-1 ②		MWC-10					
T5A	Vert. (65MC) Width-Series Coil (.3-3.3MH)	360619-1 ③							WC-24
B	Parallel Coil (4.2-32MH)	360585-2							

① Alternate Spartan part number.
② Use original yoke damping network.
③ Does not include leads or rear cover.
④ Yoke rear cover.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
2				8	8	
5				5	6	
3				3	3	
4				4	2	
2				2	4	
1				1	1	
Connect Width Coil Across	2 & 1			2 & 1	2 & 1	
Special Notes					⑤	

⑤ If insufficient width, add capacity (50-100MMF ④ 4KV MINIMUM) across horizontal yoke.

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE PRI.	SEC	REPLACEMENT DATA SPARTAN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T6	3.5K	3-4Ω	330068-2	21009	A-3018	A-3849	25S50	S-53X	

COILS (RF-IF)

ITEM No	USE	SPARTAN PART No	NOTES
L1	Ant. Trans.	360490-2	
L2	IF Trap	360501-2	4 1 Microhenries IRC part #CL4
L3	UHF IF Coil	360602-1	
L4	RF Choke	360601-9	1 Microhenry
L5	Conv. Plate	360603-1	
L6	IF Trap	360620-1	
L7	IF Trap	360620-2	
L8	Fil. Choke	360601-8	

ITEM No	USE	DC RES. PRI.	SEC.	REPLACEMENT DATA SPARTAN PART No	MEISSNER PART No	MERIT PART No	MILLER PART No	NOTES
L9	1st. Video IF	.1Ω	.1Ω	360634-1		TV-131	6325	
L10	2nd. Video IF	.1Ω	.1Ω	360638-1	17-4533	TV-130	6219	
L11	3rd. Video IF	.1Ω	.1Ω	360637-1	21-9063 *	TV-128 *	6233 *	Includes 47.25MC trap
L12	Series Peaking Coil	18Ω		360623-4			6186	680 Microhenries
L13	Series Peaking Coil	0.5Ω		360623-5	19-3160 ■	TV-184	6180	175 Microhenries
L14	Series Peaking Coil	6.3Ω		360623-6	19-3160 ■		6120 ■	150 Microhenries, wound on 47000 resistor
L15	4.5MC Trap	.5Ω		360584-1	20-1004	TV-151	1469	
L16	1st. Sound IF	.5Ω		360584-1	20-1004	TV-151	1469	
L17	2nd. Sound IF	.5Ω		360584-1	20-1004		1469	
L18	Fil. Choke	.6Ω		360601-3	19-1000		4802	1 Microhenry, IRC part #CL4
L19	Discriminator	1.5Ω	1.5ΩCT	360615-1	17-3496	TV-114	6205	

* Use adaptor plate.
■ Parallel with 47000 resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No	DC RES PRI.	SEC.	REPLACEMENT DATA SPARTAN PART No	MEISSNER PART No	MERIT PART No	MILLER PART No	RCA TYPE No	Ram PART No	Thordarson PART No	NOTES
L20	53Ω		360579-1	19-1576	TV-163	6310			25S-5	

FILTER CHOKE

ITEM No	RATINGS TOTAL DIRECT CURRENT	D.C RESISTANCE	INDUCTANCE @ CURRENT 1000 ℃/s	REPLACEMENT DATA SPARTAN PART No	Halldorson PART No	Merit PART No	Stancor PART No	Thordarson PART No	Triad PART No
L21	220A	40Ω	.6 HY	320058-1B	C9037 ①		C-2338 ①	26C41 ①	C-17X ①

① Drill new mounting holes.

COMPONENT COMBINATIONS

ITEM No	USE	DESCRIPTION	SPARTAN PART No	REPLACEMENT DATA
R1	Vertical Integrator	22K, 62000, 82000, 2000MMF, 5000MMF, 5000MMF	250186-1	Aerovox PA-110 Centralab PC-106 Cornell-Dubilier UB7M1 Erie 1405-01 Sprague Y-1

SPARTAN CHASSIS CMUA465BB, CMUA466BB, CMUA469BB, CMUA473BB, CTA465BB, CTA466BB, CTA469BB, CTA473BB (Series 1115)

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			SPARTAN PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG S/B	1/4A 250V	180157-30		313.250 (3AG - S/B 1/4A)	357001	MDL 1/4	4405

CRYSTAL DIODES

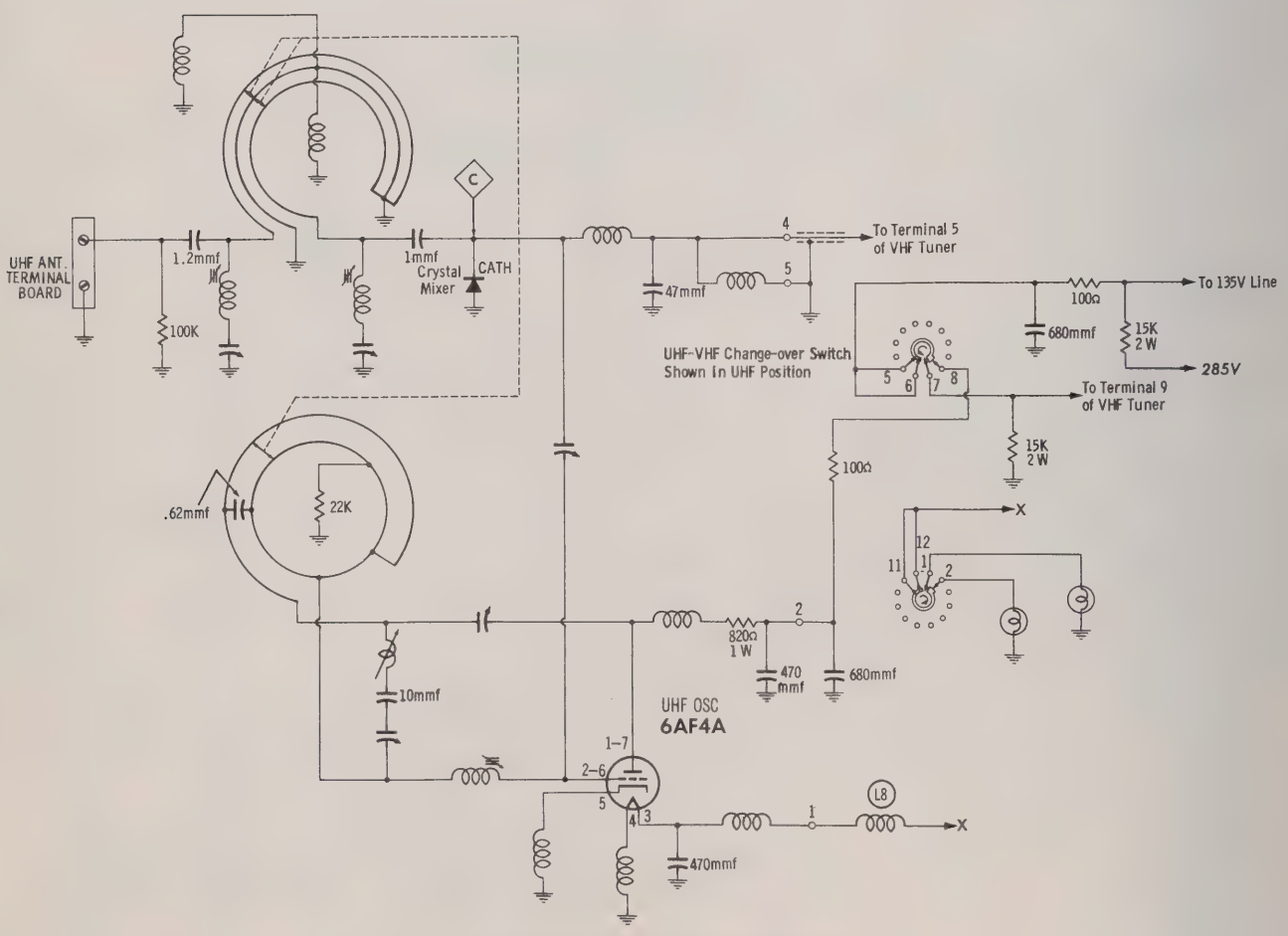
ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		SPARTAN PART No.	SYLVANIA PART No.	
M2	1N60 *		1N60	Video Detector (Pigtail)

* Some versions may use type 1N64 crystal diode in this application.

MISCELLANEOUS

ITEM No.	PART NAME	SPARTAN PART No.	NOTES
M3	Dial Light		#44
M4	Tuner	700458-4 *	VHF - All Chassis
M5	Tuner	700530-1	UHF - Chassis CMUA465BB, CMUA466BB, CMUA469BB, CMUA473BB
M6	Video Det. Assy.	360638-1	Includes M2, coils, resistor and capacitor
M7	Switch	160251-1	AC interlock (top mounted) - Not used in some versions
	Switch	160253-2	AC interlock (side mounted) - Not used in some versions
M8	Centering Device	635116-1	
M9	Ion Trap	360492-5	

* Alternate part #700453-3.



UHF Tuner Part No. 700530-1 Used With UHF Models.

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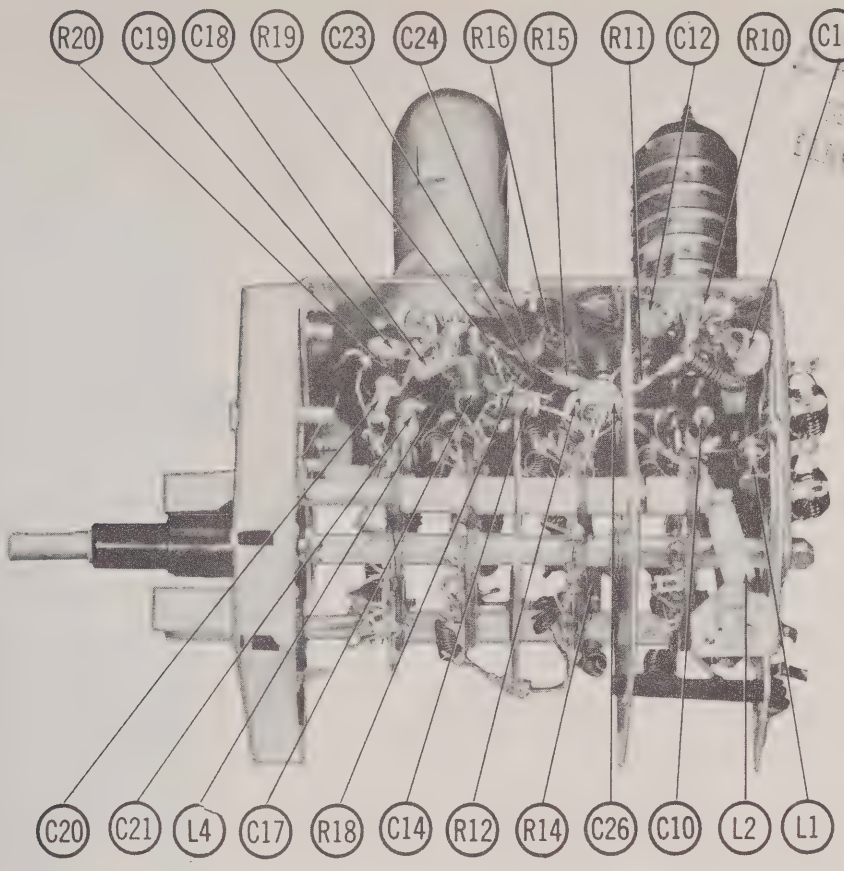
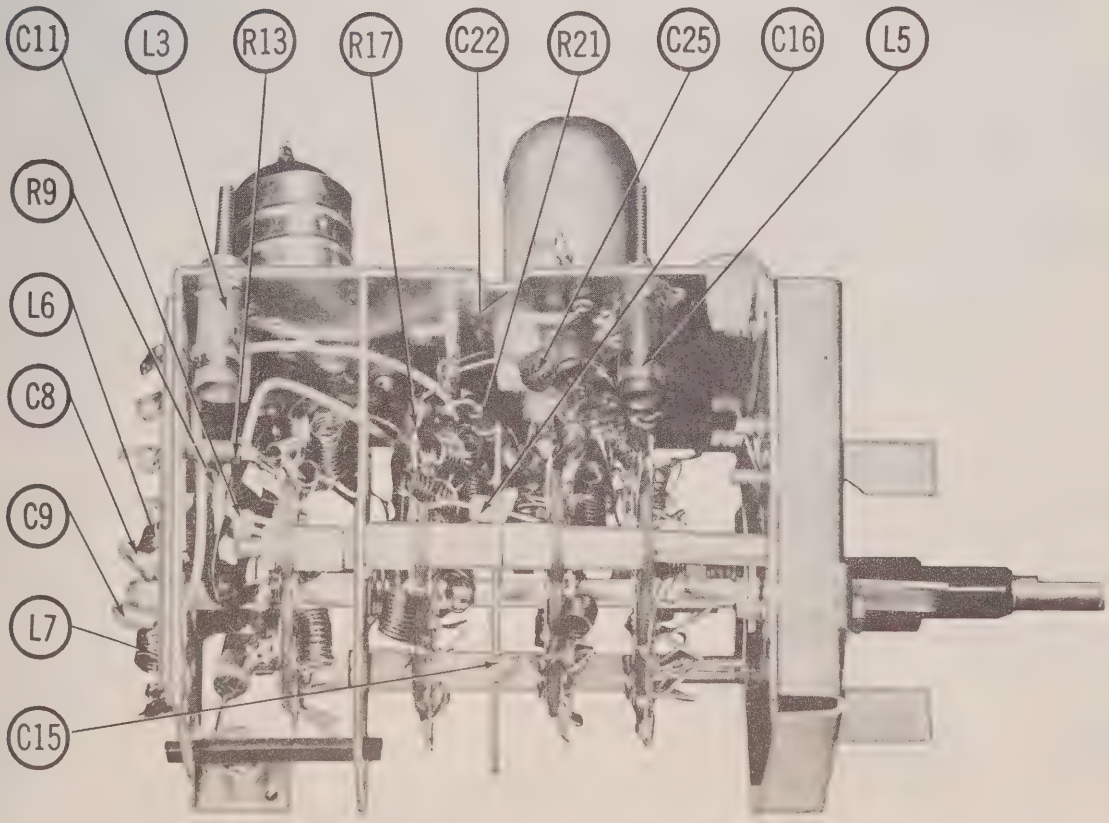
UHF TUNER SCHEMATIC



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

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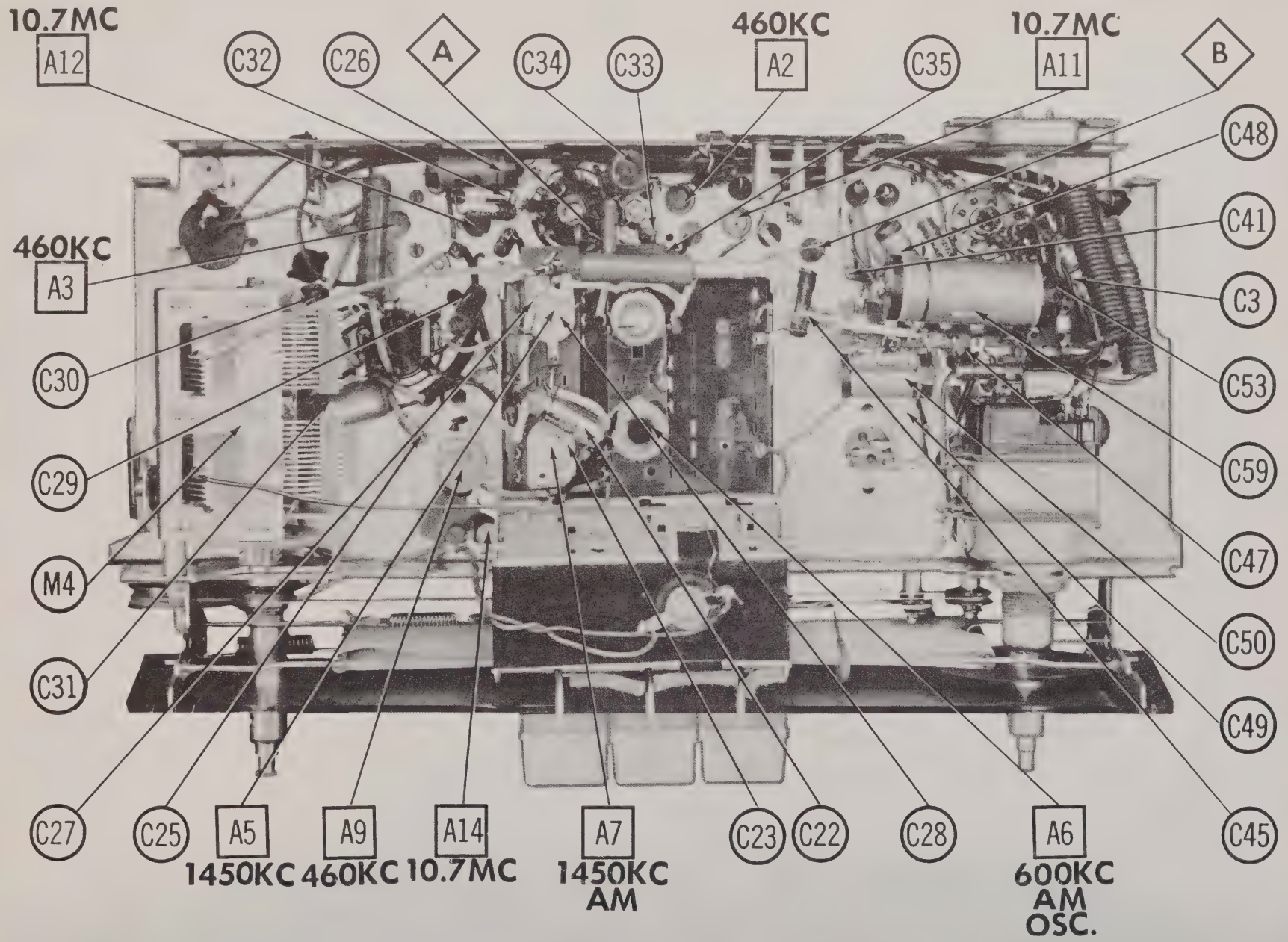
TELEFUNKEN
MODEL "Jubilee"

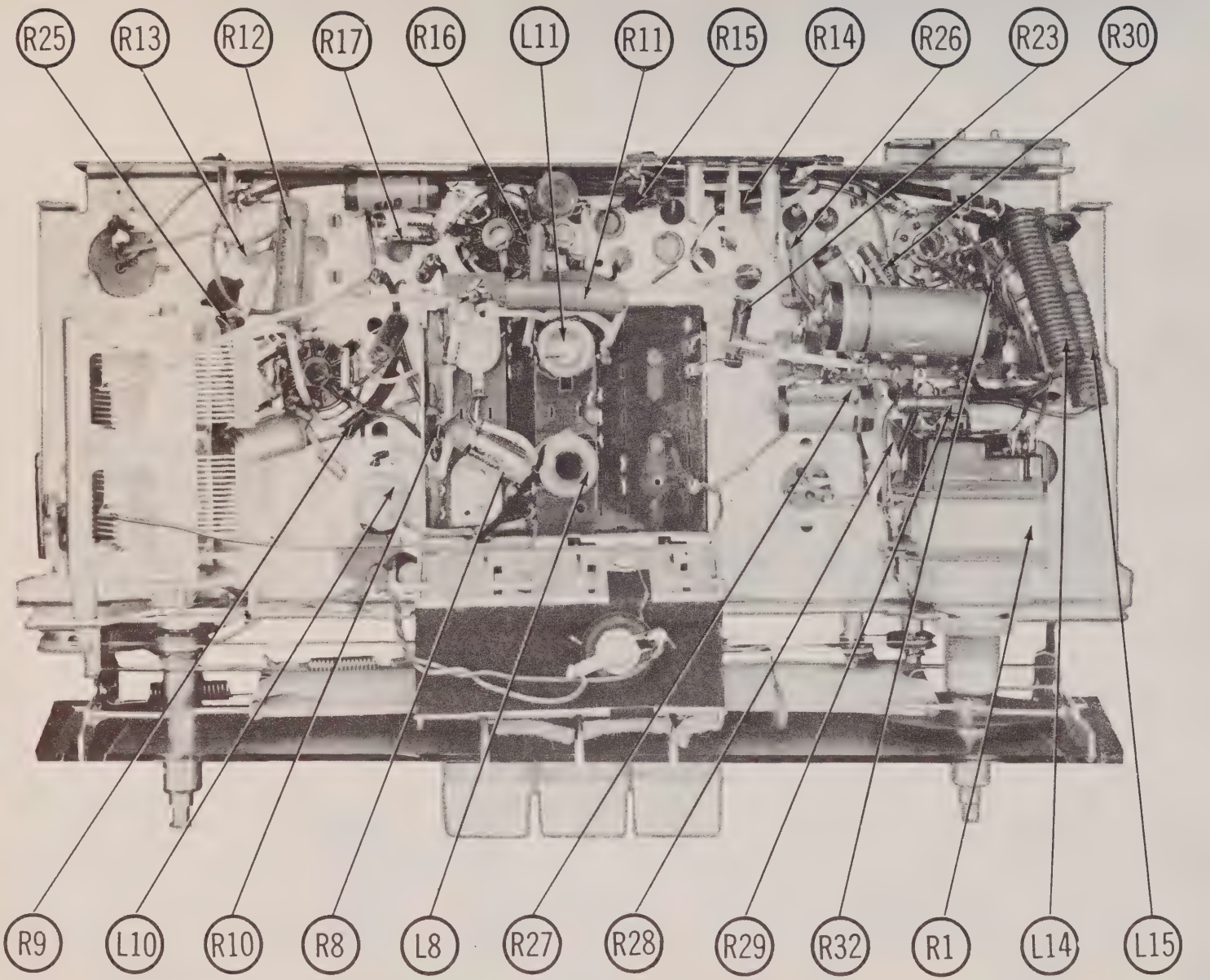
TELEFUNKEN
MODEL "Jubilee"

TRADE NAME	Telefunken Model "Jubilee"	
SUPPLIER	American Elite, Inc., 7 Park Ave., New York, N.Y.	
TYPE SET	AC Operated FM-AM Superheterodyne Receiver	
TUBES (Five)	Types ECC85 FM RF Amplifier-FM Converter, ECH81 1st. FM IF Amplifier-AM Mixer-Osc., EF89 2nd. FM IF Amp.-AM IF Amp., EABC80 Ratio Det.-AM Det.-AVC-AF Amp., EL41 Output	
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING .37 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	515KC-1620KC	FREQ.MOD. 88MC-108MC

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1956 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under international Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

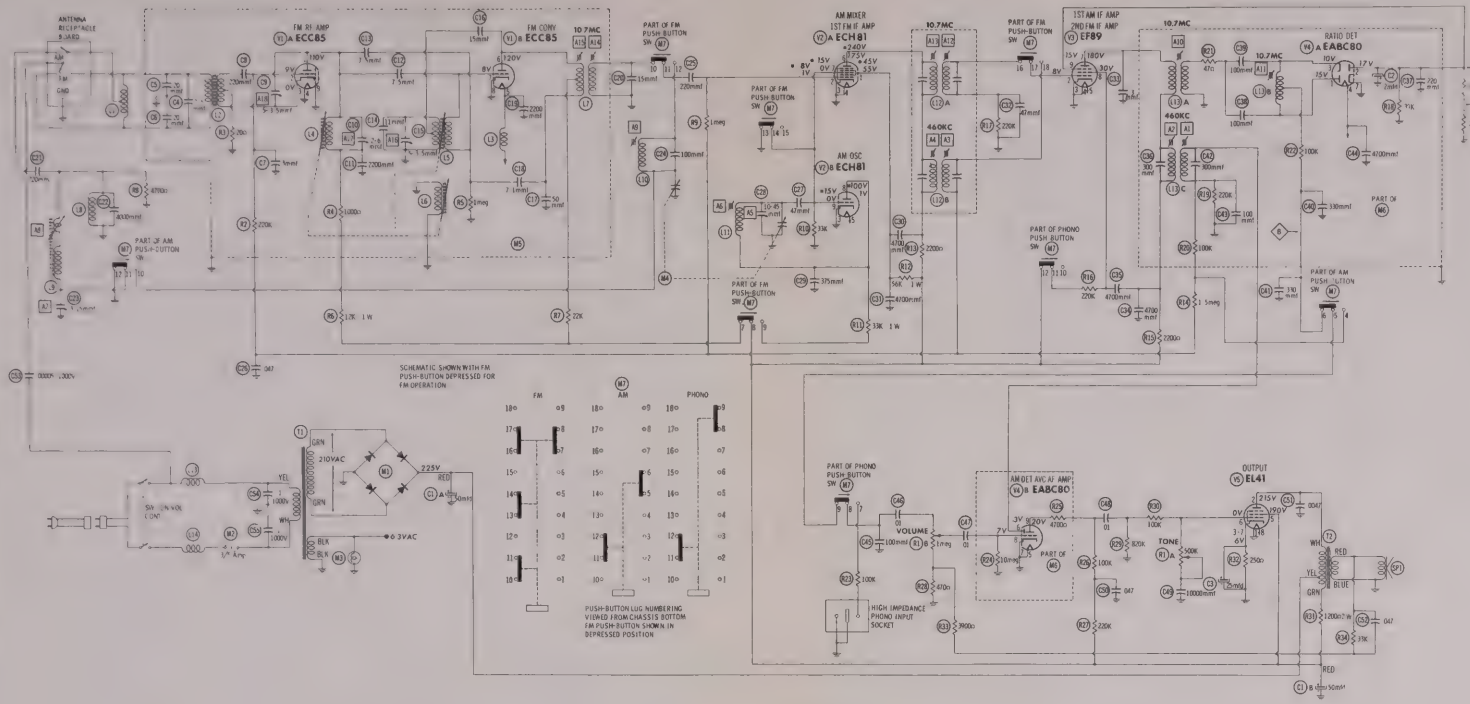


CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PROPERTY OF
L. F. BLANKENS



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6CC85	†14K	2Meg	220Ω	0Ω	1Ω	†23K	1Meg	0Ω	0Ω
V2	ECH81	†57K	3Meg	0Ω	0Ω	1Ω	†34000Ω	In ⁎33K	INF ⁎34K	0Ω ⁎33K
V3	EF89	0Ω	220K	0Ω	0Ω	1Ω	NC	†34000Ω	†224K	39K
V4	EABC80	INF	39K	INF	1Ω	0Ω	220K	0Ω	10Meg	†325K
V5	EL41	0Ω	150Ω	250Ω	NC	†1500Ω	920K	250Ω	1Ω	

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED
† MEASURED FROM OUTPUT OF ML
⁎ MEASURED IN "AM" POSITION.
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to ohmum negative.
4. Line voltage variations may cause considerable voltage readings.
5. Normal tolerance on component values makes it possible a variation of ± 15% in voltage and resistance readings.
⁎ Volume control at maximum, no signal applied for voltage measurements

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ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 2 (grid) of EF89 (V3). Low side to chassis.	460KC (400% Mod)	AM	800KC	Across voice coil	A1, A2	Adjust for maximum output.
2.	"	High side to pin 2 (grid) of ECH81 (V2). Low side to chassis.	"	"	"	"	A3, A4	"
3.	"	"	1450KC	"	1450KC	"	A5	"
4.	"	"	600KC	"	600KC	"	A6	Adjust for maximum output. Repeat step 3.
5.	200MMF & 100Ω Carbon Resistor in series	High side thru dummy to AM antenna socket. Low side to chassis.	1450KC	"	1450KC	"	A7	Adjust for maximum output.
6.	"	"	600KC	"	600KC	"	A8	Adjust for maximum output by sliding antenna coil on bar antenna. Repeat step 5.
7.	"	"	460KC	"	800KC	"	A9	Adjust for MINIMUM output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100K (± 1%) resistors in series from point (A) to chassis. The junction of these two resistors is alignment point (C) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	500MMF	High side to pin 2 (grid) of EF89 (V3). Low side to chassis.	10.7MC (Unmod)	FM	Point of non-interference	DC probe to point (A). Common to chassis.	A10	Adjust for maximum deflection.
9.	"	"	"	"	"	DC probe to point (B). Common to point (C).	A11	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
10.	"	High side to pin 2 (grid) of ECH81 (V2). Low side to chassis.	"	"	"	DC probe to point (A). Common to chassis.	A12, A13	Adjust for maximum deflection.
11.	Direct	High side to an ungrounded tube shield floating over V1. Low side to chassis.	"	"	100MC	"	A14, A15	"

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
8.	500MMF	High side to pin 2 (grid) of EF89 (V3). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point (A). Low side to chassis.	A10	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
9.	"	"	"	"	"	Vert. Amp. to point (B). Low side to point (C).	A11	Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A10 for maximum amplitude and straightness of crossover lines.
10.	"	High side to pin 2 (grid) of ECH81 (V2). Low side to chassis.	"	"	"	Vert. Amp. to point (A). Low side to chassis.	A12, A13	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
11.	Direct	High side to an ungrounded tube shield floating over V1. Low side to chassis.	"	"	100MC	"	A14, A15	"

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
12.	Direct	Across FM antenna terminals.	100MC	FM	100MC	DC probe to point (A). Common to chassis.	A16	Adjust for maximum deflection.
13.	"	"	91MC	"	91MC	"	A17	"

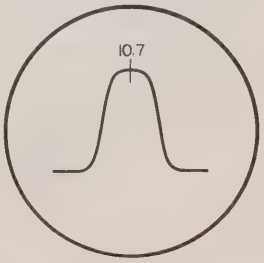


FIG. 1

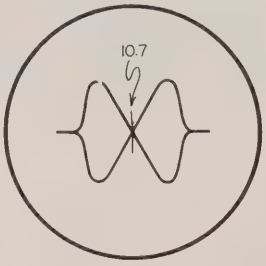
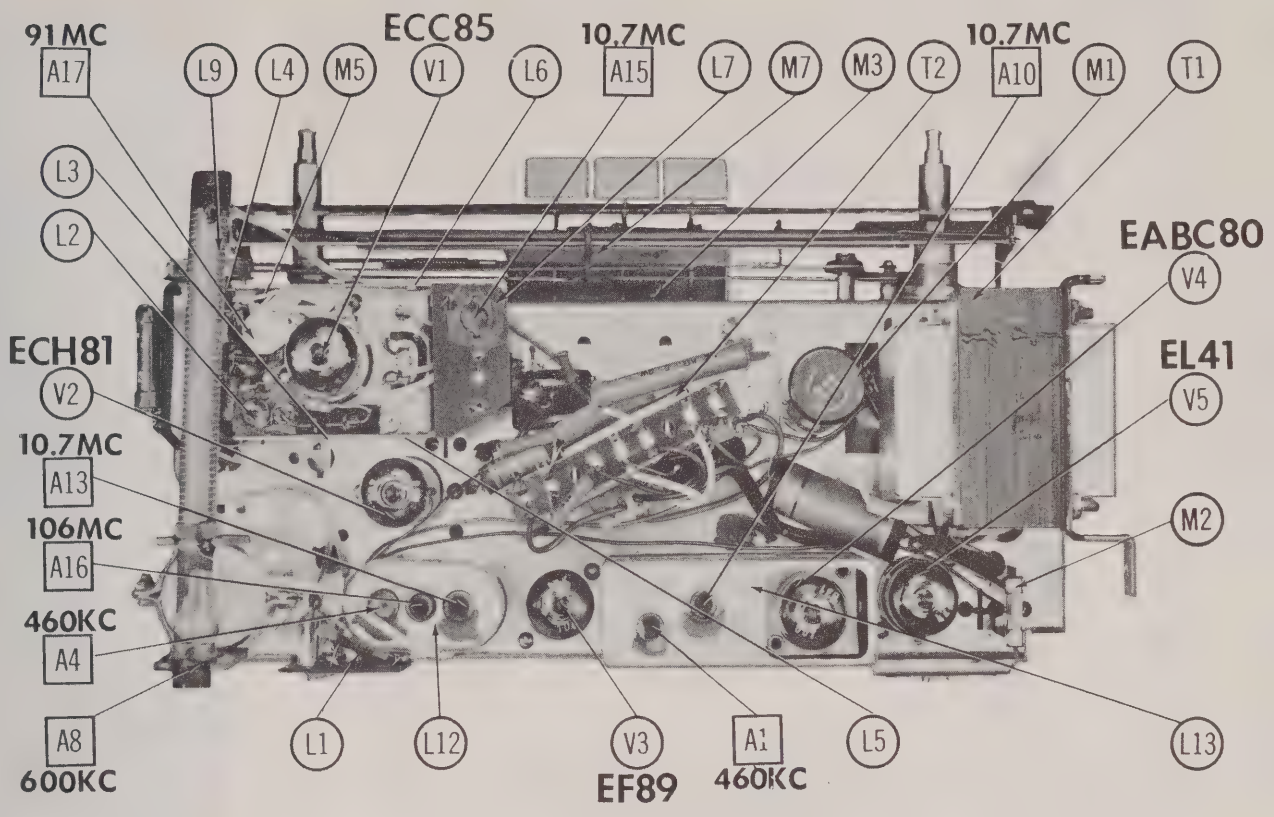
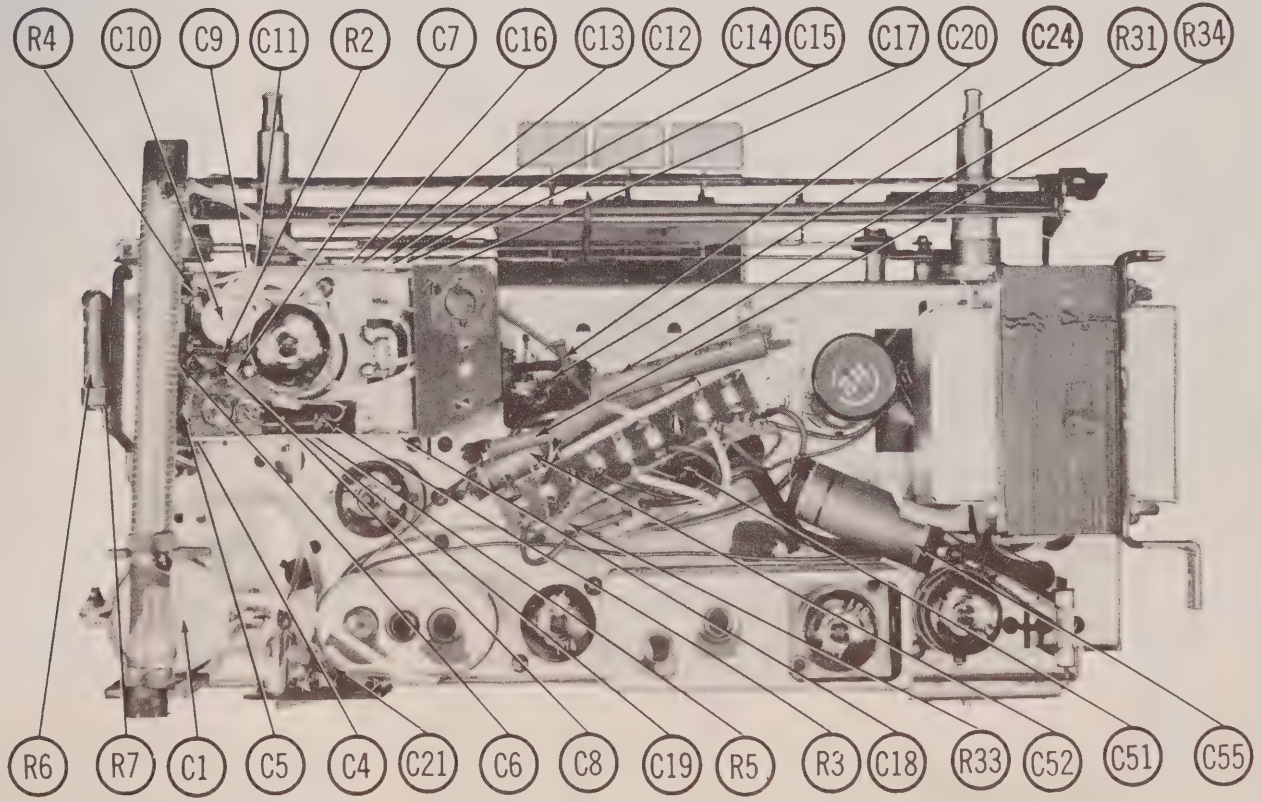


FIG. 2



CHASSIS TOP VIEW



CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	FM RF Amp.-FM Converter	ECC85	
V2	1st. FM IF Amplifier-AM Mixer-Oscillator	ECH81	
V3	2nd. FM IF Amplifier-AM IF Amplifier	EF89	
V4	Ratio Det.-AM Det.-AVC-AF Amplifier	EABC80	
V5	Output	EL41	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Telefunken PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	50	350	8265351						
B	50	350							
C2	2	30			EC2-50		ML-2-50		
C3	25	15	8265186	SRE25V25	BBR20-25	TC26	TD-25-25	MMT-0220	TVA-1205

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Telefunken PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C4	7.5									
C5	20									
C6	20									
C7	3									
C8	220									
C9	.5-3.5									
C10	2-6									
C11	2200									
C12	7.5									
C13	7.5									
C14	11									
C15	.5-3.5									
C16	15									
C17	50									
C18	7.1									
C19	2200									
C20	15									
C21	220			SI220	D6-221	TP39	GP-220	UC-5322	5GA-T22	
C22	4000									
C23	3-15									
C24	100			NP0-SI100	TCZ-100	TZ30	TCO-100	ZT-531	5TCC-T1	
C25	220			NP0-SI220	TCZ-220	TZ38	TCO-220		5TCC-T22	
C26	.047	250		BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C27	47			NP0-SI47	TCZ-47	TZ22	TCO-47	ZT-5447	5TCC-Q47	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Telefunken PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C28	10-45									
C29	375									
C30	4700			BPD-0047	DD-472	K079	ED-.0047	UC-5247	5HK-D47	
C31	4700			BPD-0047	DD-472	K079	ED-.0047	UC-5247	5HK-D47	
C32	47			NP0-SI47	TCZ-47	TZ22	TCO-47	ZT-5447	5TCC-Q47	
C33	3			NP0-DI3		Z007	TCO-3	ZT-553		
C34	4700			BPD-0047	DD-472	K079	ED-.0047	UC-5247	5HK-D47	
C35	4700			BPD-0047	DD-472	K079	ED-.0047	UC-5247	5HK-D47	
C36	300				TCZ-300	TZ41	TCO-300			
C37	220			DI-00022	DD-221	G051	ED-220	UC-5322	5GA-T22	
C38	100			SI100	D6-101	TP34	ED-100	UC-531	5GA-T1	
C39	100			SI100	D6-101	TP34	ED-100	UC-531	5GA-T1	
C40	330			1469-00033	D6-331	5R5T33	ED-330		MS-333	
C41	330			1469-00033	D6-331	5R5T33	ED-330		MS-333	
C42	300				TCZ-300	TZ41	TCO-300			
C43	100			SI100	D6-101	TP34	ED-100	UC-531	5GA-T1	
C44	4700			BPD-0047	DD-472	K079	ED-.0047	UC-5247	5HK-D47	
C45	100			SI100	D6-101	TP34	ED-100	UC-531	5GA-T1	
C46	.01	250		BPD-01	D6-103	CUB6S1	GP-10000	PT611	6TM-S1	
C47	.01	250		BPD-01	D6-103	CUB6S1	GP-10000	PT611	6TM-S1	
C48	.01	500		BPD-01	D6-103	CUB6S1	GP-10000	PT611	6TM-S1	
C49	10000			SI10000	D6-103	TP67	GP-10000	PT411	4TM-S1	
C50	.047	500		BPD-05	DF-503	CUB6S47	GP-4700	PT6147	6TM-S47	
C51	.0047	500		BPD-0047	D6-472	CUB6D47		PT6247	6TM-D47	
C52	.047	250		BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C53	.00005	1000								
C54	.1	1000								
C55	.1	1000								

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Telefunken PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K							Tone (Panel)
B	1Meg							Volume (Rear)
C	Switch							On-off (Power)

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Telefunken PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R2	220K			BTS-220K	
R3	20Ω			BW½-20 5%	
R4	1000Ω			BTS-1000	
R5	1Meg			BTS-1Meg	
R6	12K	1		BTA-12K	
R7	22K			BTS-22K	
R8	4700Ω			BTS-4700	
R9	1Meg			BTS-1Meg	
R10	33K			BTS-33K	
R11	33K	1		BTA-33K	
R12	56K	1		BTA-56K	
R13	2200Ω			BTS-2200	
R14	1.5Meg			BTS-1.5Meg	
R15	2200Ω			BTS-2200	
R16	220K			BTS-220K	
R17	220K			BTS-220K	
R18	39K			BTS-39K	Note 1
R19	220K			BTS-220K	
R20	100K			BTS-100K	
R21	47Ω			BTS-47	
R22	100K			BTS-100K	
R23	100K			BTS-100K	
R24	10Meg			BTS-10Meg	
R25	4700Ω			BTS-4700	
R26	100K			BTS-100K	
R27	220K			BTS-220K	
R28	470Ω			BTS-470	
R29	820K			BTS-820K	
R30	100K			BTS-100K	
R31	1200Ω	2		BTB-1200	
R32	250Ω			BTS-250	
R33	3900Ω			BTS-3900	
R34	33K			BTS-33K	

Note 1. Some versions use a 220K resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA Telefunken PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC ⓐ.37A	210VAC ⓐ.043A	6.3VAC 2.06A		9037052					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Telefunken PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	8200Ω	4.7Ω	9036649						

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA Telefunken PART No.	QUAM PART No.	RCA TYPE No.	NOTES
SP1	5"	PM	4.7Ω	9044243			

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA Telefunken PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	FM Ant. Coil	0ΩCT						
L2	FM Ant. Coil	0Ω	0ΩCT					
L3	Fil. Choke	0Ω						
L4	FM RF Coil	0Ω						
L5	FM Osc. Coil	0Ω	0Ω					
L6	IF Trap	0Ω						
L7	1st. FM IF	1ΩCT	1.1Ω					
L8	AM Ant. Coil	38Ω		7035803				
L9	AM Loop Stick	1.5Ω		9036641				
L10	AM IF Trap	10Ω		7035804				
L11	AM Osc. Coil	1.2Ω		9036223				
L12 A	2nd. FM IF	1.4Ω	.9Ω	9044346				
B	1st. AM IF	6Ω	4.2Ω					
L13A	Ratio Det. Trans	2.3Ω	.1Ω					
B	Ratio Det. Coil	.2ΩCT						
C	2nd. AM IF	4.4Ω	4.2Ω					
L14	Line Choke	.1Ω		9044241				
L15	Line Choke	.1Ω		9044241				

PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

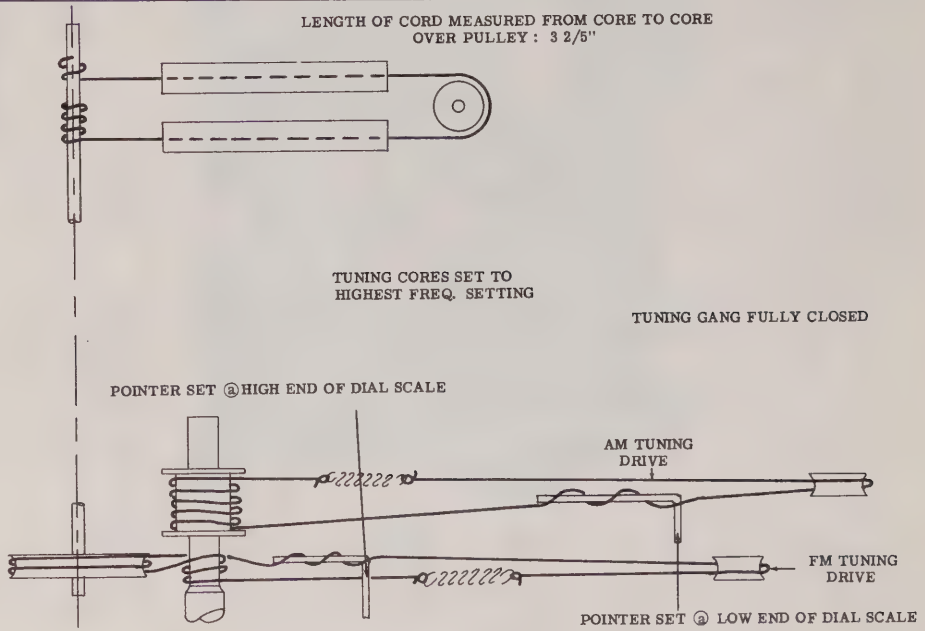
ITEM No.	RATING CURRENT	REPLACEMENT DATA Telefunken PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	NOTES
M1	.043A	6043621		60-9150 ①				① Two used.

FUSES

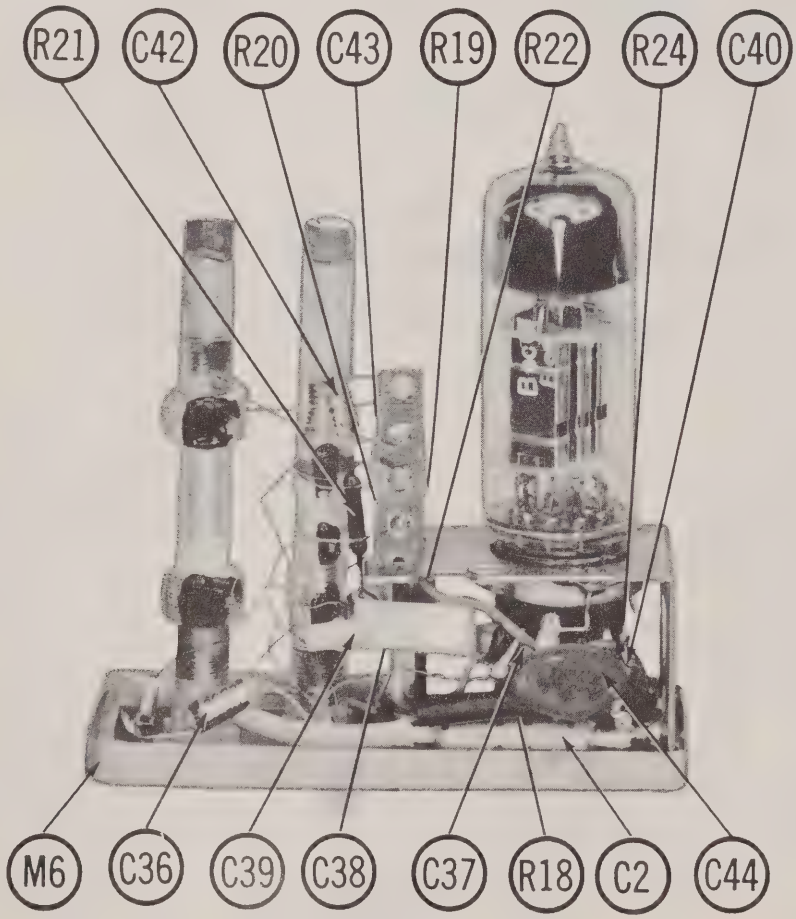
ITEM No.	TYPE	RATING	REPLACEMENT DATA Telefunken PART No. FUSE	Telefunken PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2		.6A 250V	8248265	7041261				

MISCELLANEOUS

ITEM No.	PART NAME	Telefunken PART No.	NOTES
M3	Dial Light	8247002	Screw type (7V ⓐ .3A)
M4	Tuning Cap.	8236014	2 Gang (10-520MMF, 10-520MMF)
M5	FM Tuner-Converter Unit	9049452	Less V1. Includes resistors, capacitors and coils
M6	Ratio Det.-AM Det.-AVC-AF Amp Unit	9049358	Less V4. Includes resistors, capacitors and coils
M7	Switch Assy.	9045728	(AM-FM-Phono) Pushbutton slide type. Includes L8, L11.
	Cabinet	9049460	
	Knob	8212762	AM Tuning & On-off-volume
	Knob	8212761	FM Tuning & tone
	Pushbutton	6824886	3 used
	Dial	8213270	
	Pointer	9045213	AM
	Pointer	9044260	FM


LENGTH OF CORD MEASURED FROM CORE TO CORE OVER PULLEY : 3 2/5"
TUNING CORES SET TO HIGHEST FREQ. SETTING
TUNING GANG FULLY CLOSED
POINTER SET ⓐ HIGH END OF DIAL SCALE
AM TUNING DRIVE
FM TUNING DRIVE
POINTER SET ⓐ LOW END OF DIAL SCALE

DIAL CORD STRINGING

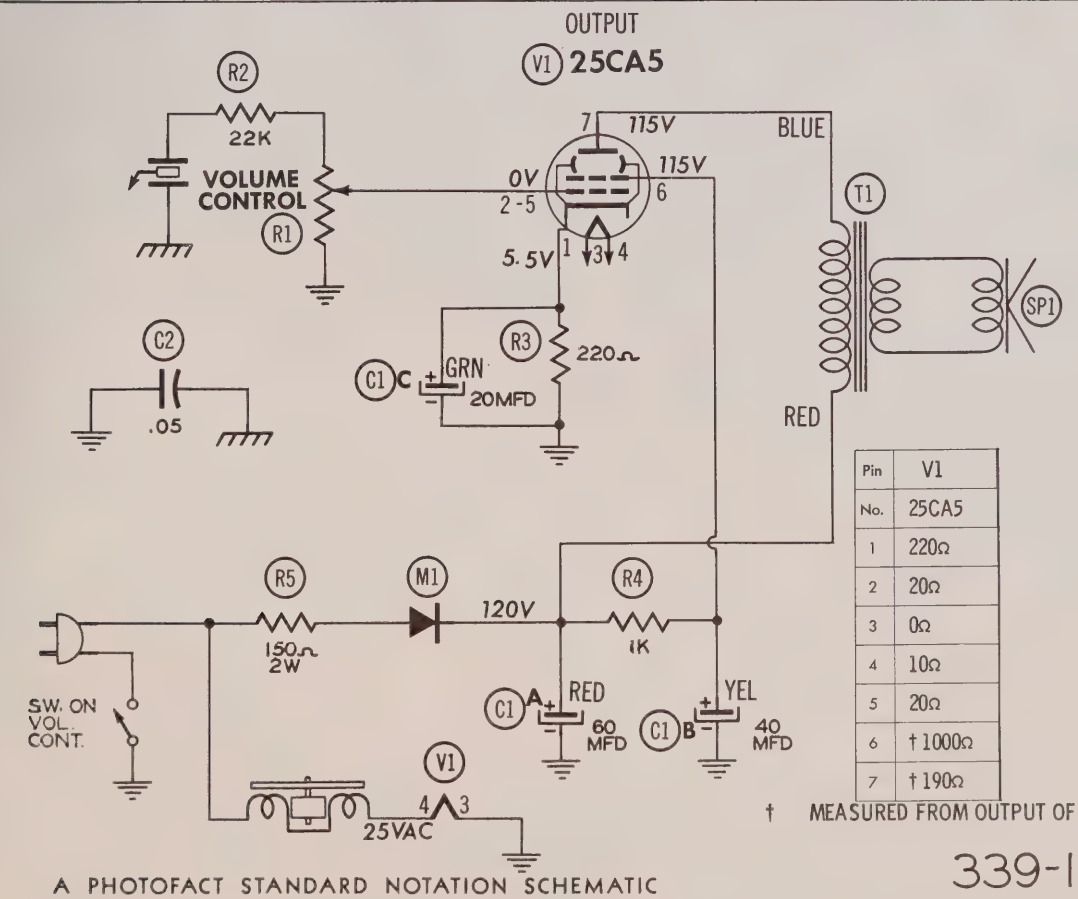


CHASSIS SUB ASSEMBLY

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

ULTRATONE
MODEL 310

TRADE NAME	Ultratone Model 310
MANUFACTURER	Audio Industries, Michigan City, Indiana
TYPE SET	AC Operated Phono Amplifier With 3 Speed Manual Record Player
TUBES (One)	Type 25CA5
POWER SUPPLY	105-125 Volts AC - 60 Cycles RATING .33 Amp. @ 117 Volts AC



Pin No.	V1 25CA5
1	220Ω
2	20Ω
3	0Ω
4	10Ω
5	20Ω
6	†1000Ω
7	†190Ω

† MEASURED FROM OUTPUT OF M1.

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Output	25CA5	

ITEM No.	USE	TYPE	NOTES

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Ultratone PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	60	150		PRS150/25V	BBRT5515C	TCT3117	TDLT-7	FMT-333	R2199*
B	40	150		5050/20					
C	20	25							

* Non catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Ultratone PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.05	200		BPD-05	DF-503	CUB2S5		PT415	2TM-S5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Ultratone PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	$\frac{1}{2}$		AB-60	A47-500K-Z	Q13-133	U-48	Volume
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch			KB-1	SWE-12	76-1	US-26T	Attach to R1A

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Ultratone PART No.	IRC PART No.	
R2	22K			BTS-22K	
R3	220Ω			BTS-220	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Ultratone PART No.	IRC PART No.	
R4	1000Ω			BTS-1000	
R5	150Ω	2		PW4-150	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	Ultratone PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3800Ω	3.8Ω		Z1101	A-3025	A-3332	26S58	S-12X	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	Ultratone PART No.	QUAM PART No.	RCA TYPE No.	
SP1	4"	PM	3.8Ω		4A07	223S1	

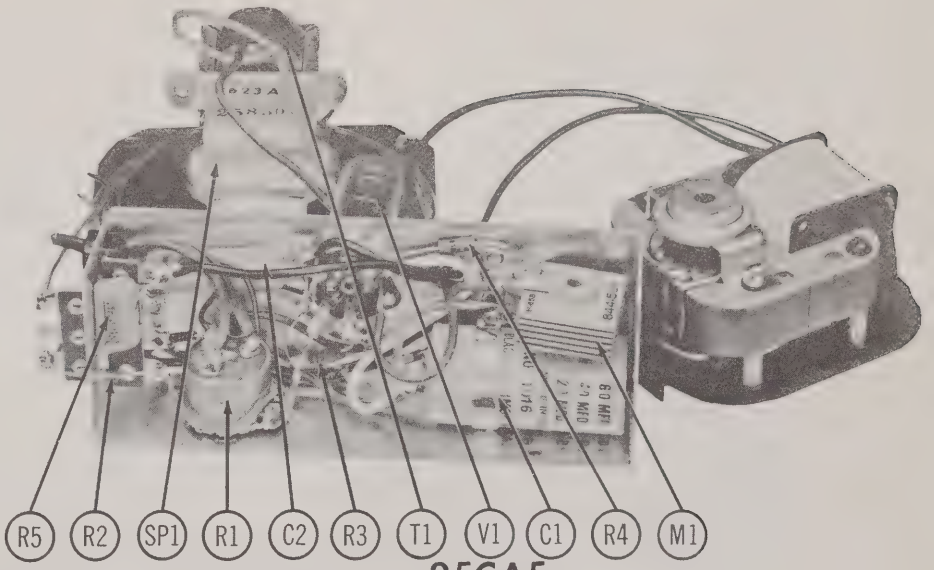
SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	Ultratone PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.028A		1263A		6S65	8J1	65	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	Ultratone PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M2		106 *P-106		*2460		*Complete Tone Arm and Cartridge Assembly

CHASSIS—BOTTOM VIEW



25CA5

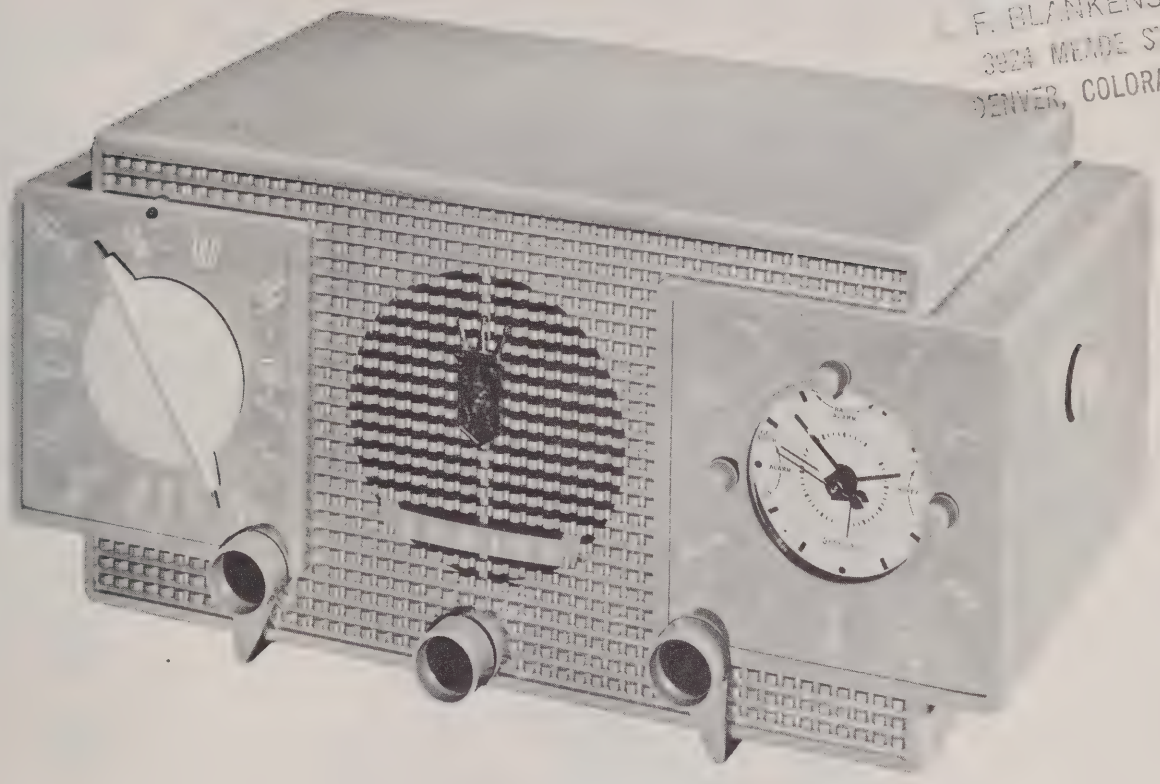
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA				REMARKS
	Ultratone PART No.	JENSEN PART No.	WALCO PART No.		
M3		*W-122			* Metal

PROPERTY OF
F. BLANKENSHIP
3824 MEADE ST.
DENVER, COLORADO

ZENITH MODELS
Y733G, R, Y (Ch. 7Y03)



ZENITH MODELS
Y733G, R, Y (Ch. 7Y03)

TRADE NAME	Zenith Models Y733G, Y733R, Y733Y (Ch. 7Y03)		
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Ill.		
TYPE SET	AC Operated FM-AM Superheterodyne Receiver With Electric Clock		
TUBES (Seven)	Types 12BA6 FM RF Amplifier, 12AT7 Mixer-Oscillator, 12BA6 1st IF Amplifier, 12BA6 2nd IF Amplifier, 12AU6 Limiter, 19T8 Disc. -AM Det. -AVC-AF Amp., 35C5 Output.		
POWER SUPPLY	110-120 Volts AC - 60 Cycles	RATING	.27 Amp. @ 117 Volts AC
TUNING RANGE - BROADCAST	540KC - 1620KC	FM	88MC - 108MC

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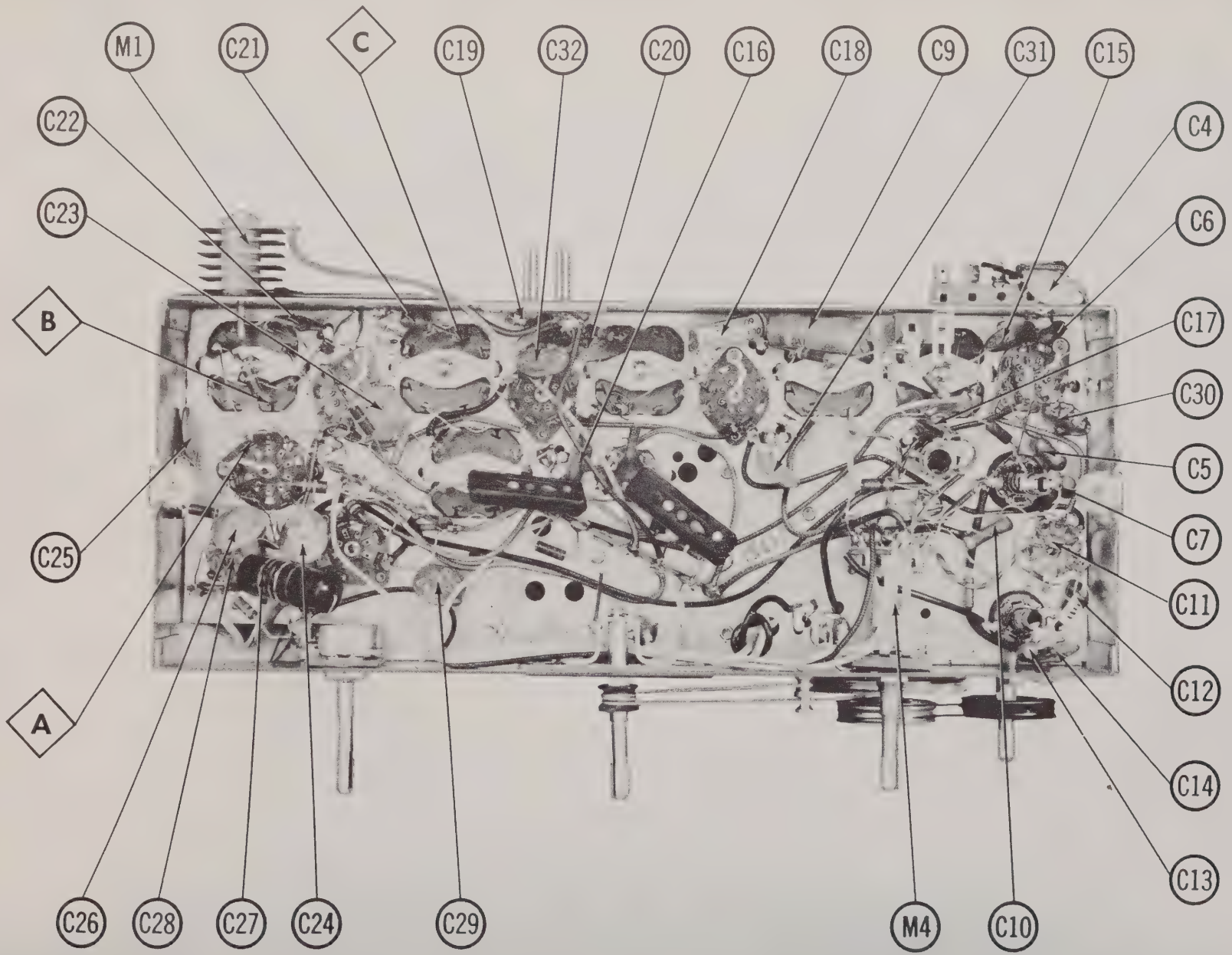
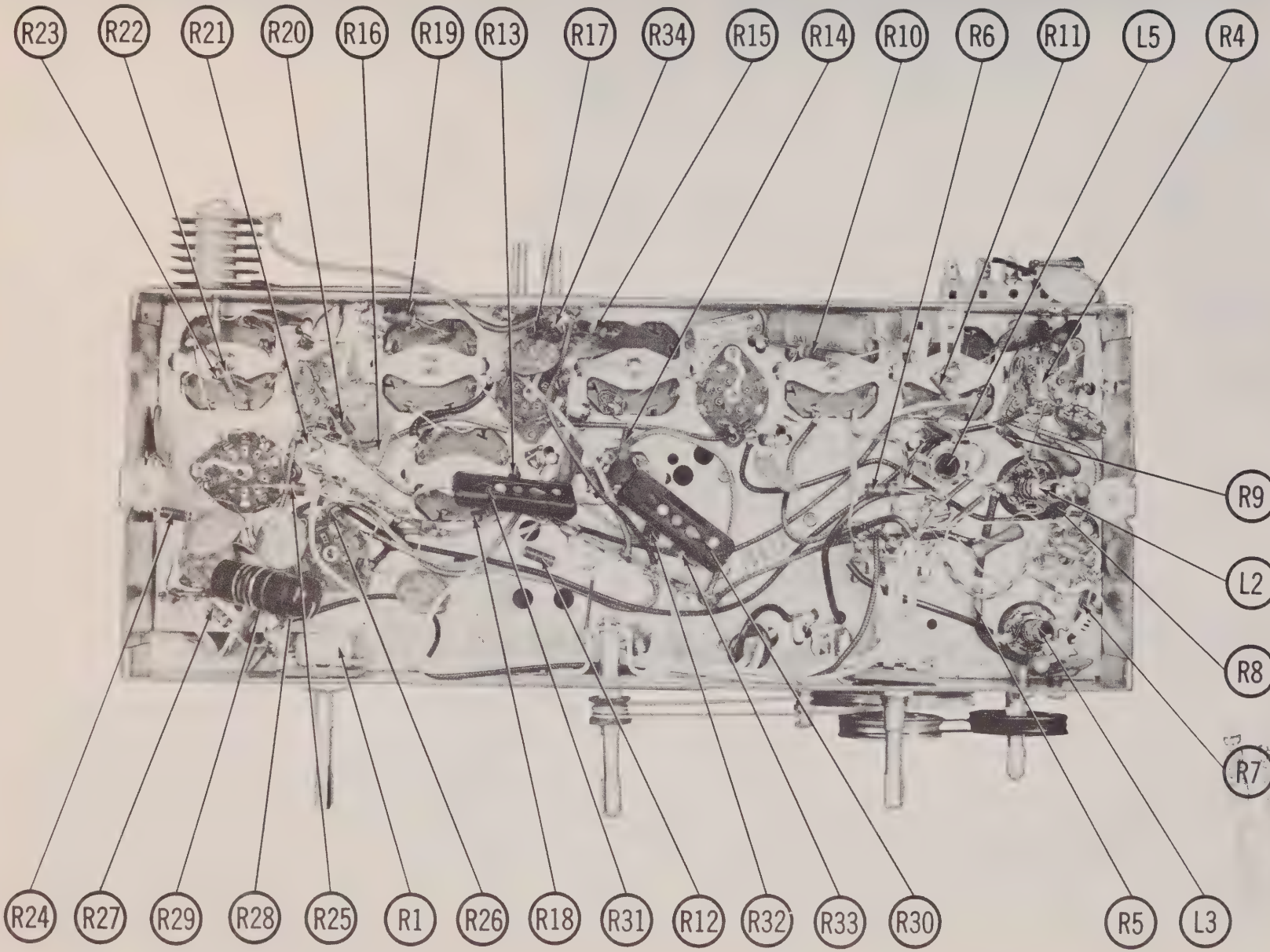
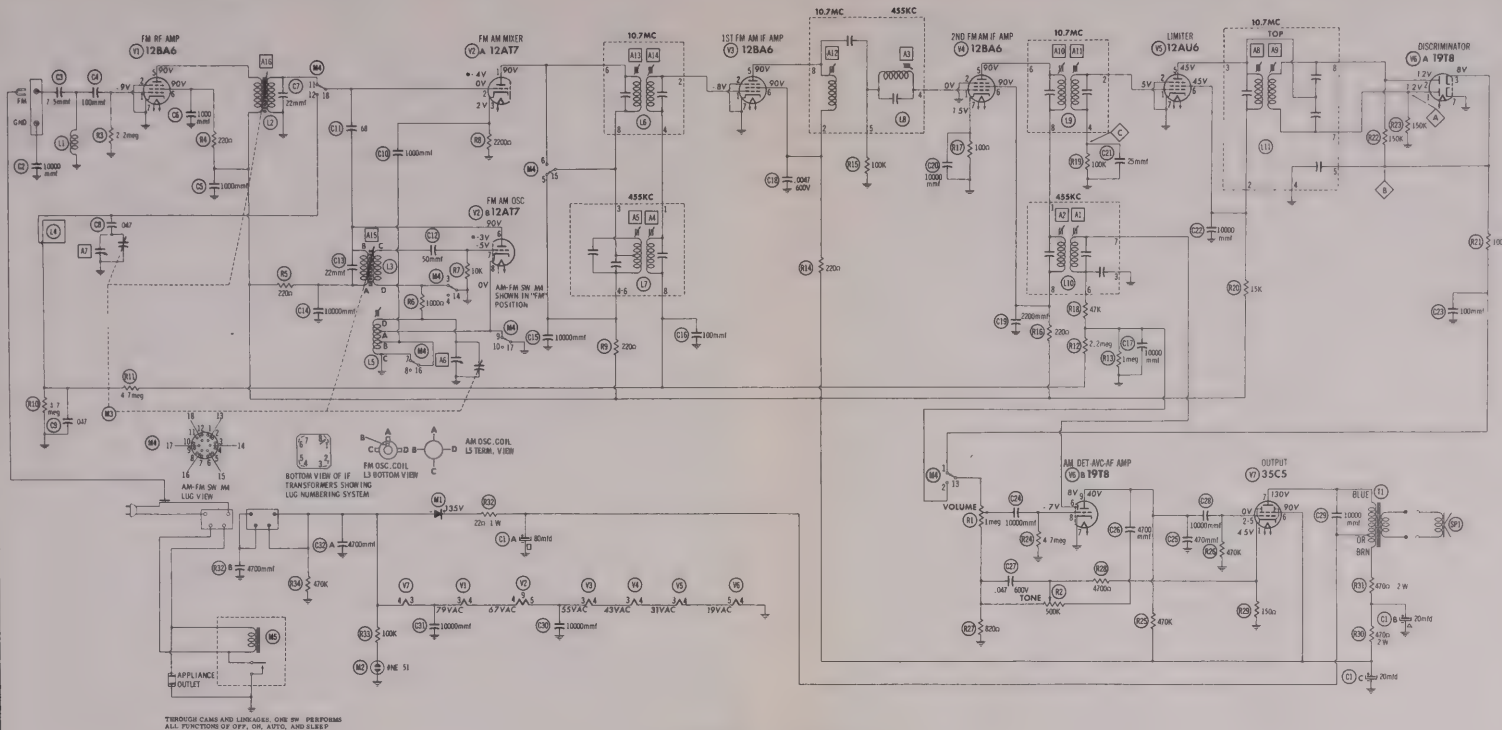


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PROPERTY OF
E. F. BLANKENSHIP



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BA6	2.2Meg	0Ω	75Ω	65Ω	↑1000Ω	↑1200Ω	0Ω		
V2	12AT7	↑1200Ω	0Ω ∞2.8Meg	220Ω	65Ω	55Ω	↑1200Ω	10K	0Ω ∞2Ω	60Ω
V3	12BA6	2Meg	0Ω	55Ω	40Ω	↑1200Ω	↑1200Ω	0Ω		
V4	12BA6	100K	0Ω	40Ω	30Ω	↑1200Ω	↑1200Ω	100Ω		
V5	12AU6	100K	0Ω	30Ω	18Ω	↑15K	↑15K	0Ω		
V6	19T8	150K	150K	220K	0Ω	18Ω	∞500K	0Ω	4.7Meg	↑470K
V7	35C5	150Ω	470K	75Ω	110Ω	470K	↑1000Ω	↑260Ω		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
↑ MEASURED FROM OUTPUT OF M1.
∞ MEASURED IN "AM" POSITION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 2 (grid) of 12AT7 (V2). Low side to chassis.	455KC (400∿ Mod)	BC	600KC	Across voice coil.	A1, A2, A3, A4, A5	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1600KC	"	1600KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	"	Tune to 1400KC signal.	"	A7	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Use a 2Meg resistor in series with DC probe of VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.05MFD	High side to pin 1 (grid) of 12AU6 (V5). Low side to chassis.	10.7MC (unmod)	FM	Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A8	Adjust for maximum deflection.
5.	"	"	"	"	"	DC probe to point Ⓑ. Common to chassis.	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
6.	"	High side to pin 1 (grid) of 12BA6 (V4). Low side to chassis.	"	"	"	DC probe to point Ⓒ. Common to chassis.	A10, A11	Adjust for maximum deflection.
7.	"	High side to pin 1 (grid) of 12BA6 (V3). Low side to chassis.	"	"	"	"	A12	"
8.	"	High side to pin 2 (grid) of 12AT7 (V2). Low side to chassis.	"	"	"	"	A13, A14	"

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.05MFD	High side to pin 1 (grid) of 12AU6 (V5). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference.	Vert. amp. to point Ⓐ. Low side to chassis.	A8	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
5.	"	"	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A9	Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.
6.	"	High side to pin 1 (grid) of 12BA6 (V4). Low side to chassis.	"	"	"	Vert. amp. to point Ⓒ. Low side to chassis.	A10, A11	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
7.	"	High side to pin 1 (grid) of 12BA6 (V3). Low side to chassis.	"	"	"	"	A12	"
8.	"	High side to pin 2 (grid) of 12AT7 (V2). Low side to chassis.	"	"	"	"	A13, A14	"

FM RF ALIGNMENT

Use a 2Meg resistor in series with DC probe of VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	270Ω carbon resistor	High side thru 270Ω to FM antenna terminal. Low side to chassis.	98MC (unmod)	FM	98MC	DC probe to point Ⓒ. Common to chassis.	A15, A16	Adjust in order given for maximum deflection.

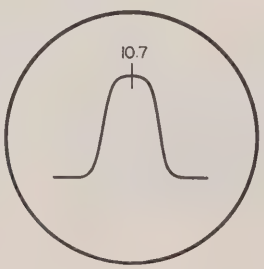


FIG. 1

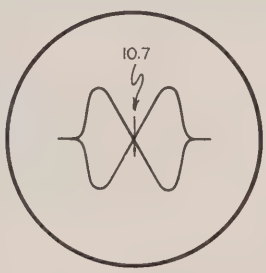


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	FM RF Amplifier	12BA6	
V2	Mixer-Oscillator	12AT7	
V3	1st IF Amplifier	12BA6	
V4	2nd FM IF Amplifier	12BA6	

ITEM No.	USE	TYPE	NOTES
V5	Limiter	12AU6	
V6	Disc. -AM Det. -AVC- AF Amp.	19T8	
V7	Output	35C5	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■80	150	22-2399	AFH3-13	C012	FP321	TMT-13	T-055	TVL-3443. 6
B	▲20	150				TC48			
C	20	150							

FIXED CAPACITORS

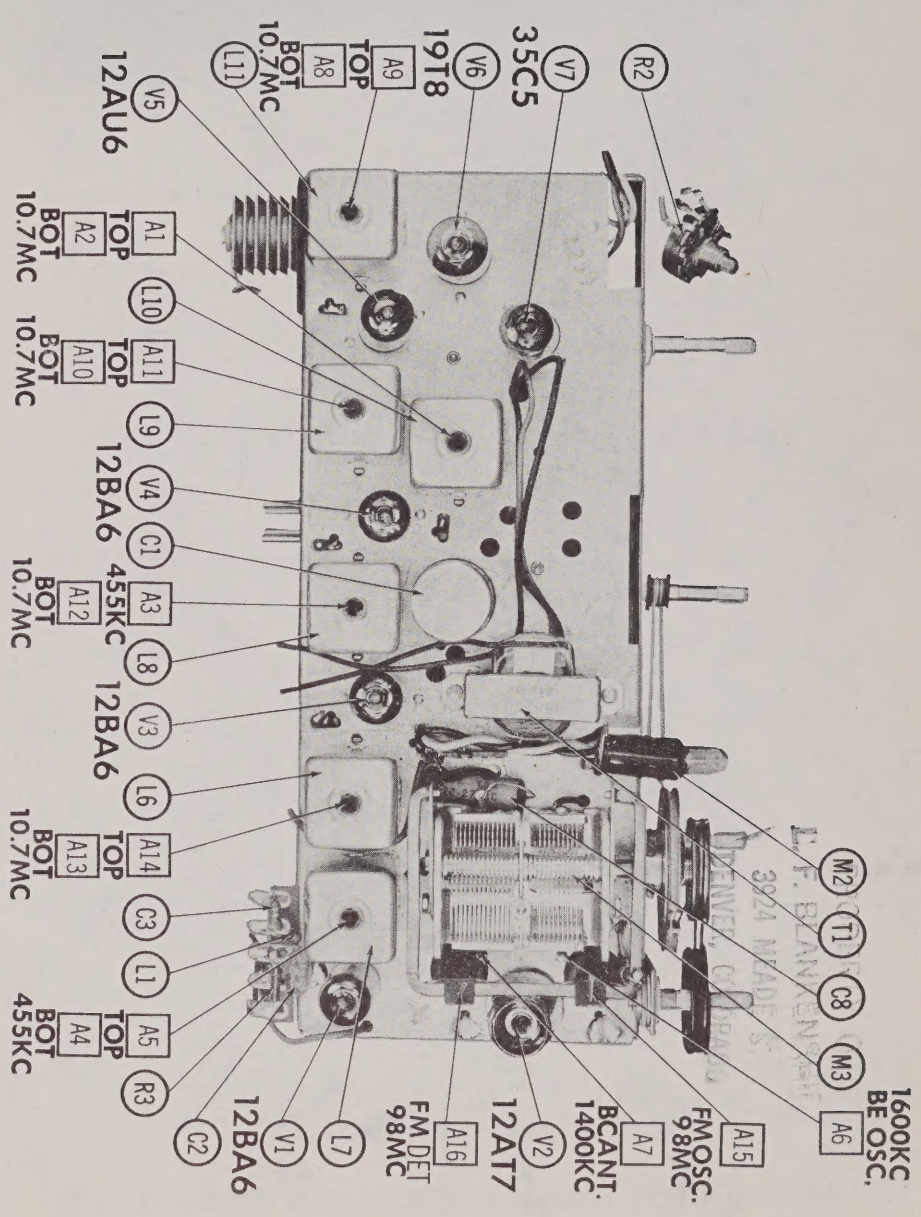
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	10000		22-3	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C3	7.5		22-1852							
C4	100		22-5	BPD-0001	DD-101	G042	801-101	UC-531	5GA-T1	
C5	1000		22-1676	SII000	D6-102	TP52	GP2L-102	UC-521	5GA-D1	
C6	1000		22-1676	SII000	D6-102	TP52	GP2L-102	UC-521	5GA-D1	
C7	22		22-1506							
C8	.047	200	22-2792	BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C9	.047	200	22-2792	BPD-05	DF-503	CUB2S47		PT4147	2TM-S47	
C10	1000		22-1676	1464-001		1R5D1		MCE255	MS-21	
C11	.68		22-1766		TCZ-R68	TZ02	NP0A-0R68			
C12	50		22-1367	N330-SI47	TCA-47		N330L-470			
C13	22		22-1506							
C14	10000		22-3	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C15	10000		22-3	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C16	100		22-5	BPD-0001	DD-101	G042	801-101	UC-531	5GA-T1	
C17	10000		22-3	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C18	.0047	600	22-2824	BPD-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C19	2200		22-18	BPD-0022	D6-222	K073	811-0022	UC-5222	5HK-D22	
C20	10000		22-3	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C21	25		22-1887	SI25	D6-250	TP25	GP1K-250	UC-5425	5GA-Q25	
C22	10000		22-3	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C23	100		22-17	BPD-0001	DD-101	G042	801-101	UC-531	5GA-T1	
C24	10000		22-3	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C25	470		22-6	BPD-00047	DD-471	K060	811-471	UC-5347	5GA-T47	
C26	4700		22-4	BPD-0047	DD-472	K079	811-0047	UC-5247	5HK-D47	
C27	.047	600	22-2795	BPD-05	DF-503	CUB6S47		PT6147	6TM-S47	
C28	10000		22-3	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C29	10000		22-3	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C30	10000		22-3	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C31	10000		22-3	BPD-01	DD-103	K082	811-01	DC511	5HK-S1	
C32A	4700		22-24	BPD-2X0047	DD2-502	DK079	811-0047	DC525	5HK-2D47	
B	4700						811-0047	DC525		

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	63-2798	AB-70	A47-1Meg-Z	Q13-137	U53	Volume
B	Shaft		Not Req.	AK-4	KSS-3	Not Req.	Not Req.	Attach to R1A
R2A	500K	½	63-2144	AB-617	A47-500K-S	Q11-133	U50	Tone
B	Shaft		Not Req.	AK-4	KSS-3	Not Req.	Not Req.	Attach to R2A

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ZENITH PART No.	IRC PART No.	
R3	2.2Meg		63-1926	BTS-2.2Meg	
R4	220Ω		63-1758	BTS-220	
R5	220Ω		63-1758	BTS-220	
R6	1000Ω		63-1786	BTS-1000	
R7	10K		63-1828	BTS-10K	
R8	2200Ω		63-1800	BTS-2200	
R9	220Ω		63-1758	BTS-220	
R10	4.7Meg		63-1940	BTS-4.7Meg	
R11	4.7Meg		63-1940	BTS-4.7Meg	
R12	2.2Meg		63-1926	BTS-2.2Meg	
R13	1Meg		63-1912	BTS-1Meg	
R14	220Ω		63-1758	BTS-220	
R15	100K		63-1870	BTS-100K	
R16	220Ω		63-1758	BTS-220	
R17	100Ω		63-1744	BTS-100	
R18	47K		63-1856	BTS-47K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ZENITH PART No.	IRC PART No.	
R19	100K		63-1870	BTS-100K	
R20	15K		63-1835	BTS-15K	
R21	100K		63-1870	BTS-100K	
R22	150K		63-1876	BTS-150K	
R23	150K		63-1876	BTS-150K	
R24	4.7Meg		63-1940	BTS-4.7Meg	
R25	470K		63-1898	BTS-470K	
R26	470K		63-1898	BTS-470K	
R27	820Ω		63-1782	BTS-820	
R28	4700Ω		63-1814	BTS-4700	
R29	150Ω		63-1750	BTS-150	
R30	470Ω	2	63-1069	BW2-470	
R31	470Ω	2	63-1069	BW2-470	
R32	22Ω	1	63-3197	BTA-22	
R33	100K		63-1870	BTS-100K	
R34	470K		63-1898	BTS-470K	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ZENITH PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3100Ω	3-4Ω		Z1103	A-3031	A-3336	24S50A	S-16X	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	QUAM PART No.	RCA TYPE No.	
SP1	5 1/4"	PM	3-4Ω	49-716	52A1	217S1	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	FM Ant. Coil	0Ω		20-355				
L2	FM RF Coil	0Ω	0Ω	S-13871				
L3	FM Osc. Coil	0Ω	0Ω	S-15733				
L4	AM Loop Ant.	1.9Ω		S-24363				Includes cabinet back.
L5	AM Osc. Coil	4.6Ω		S-22914				Tap @ .6Ω and 2Ω
L6	1st FM IF	.5Ω	.5Ω	95-1150	16-3487*	FM-251	1451	* Use Adaptor Plate
L7	1st AM IF	4.8Ω	17Ω	95-1250	16-6666	BC-368	1312-C1	
L8	2nd FM Trans. & AM IF Trans	1.5Ω 26Ω		95-1251				
L9	3rd FM IF	.5Ω	.5Ω	95-1150	16-3487*	FM-251	1451	
L10	3rd AM IF	17Ω	17Ω	95-1102	16-6770*	BC-355*	12-C6*	
L11	Discriminator	.4Ω	.4ΩCT	95-1153				

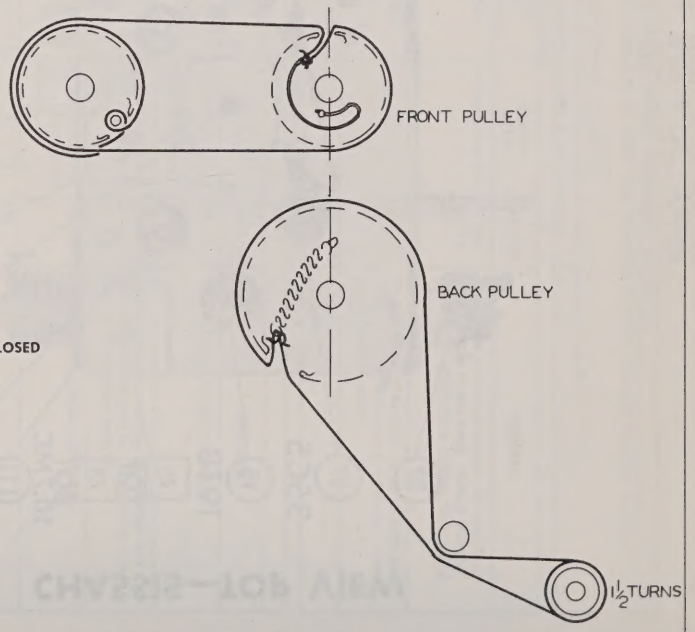
PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

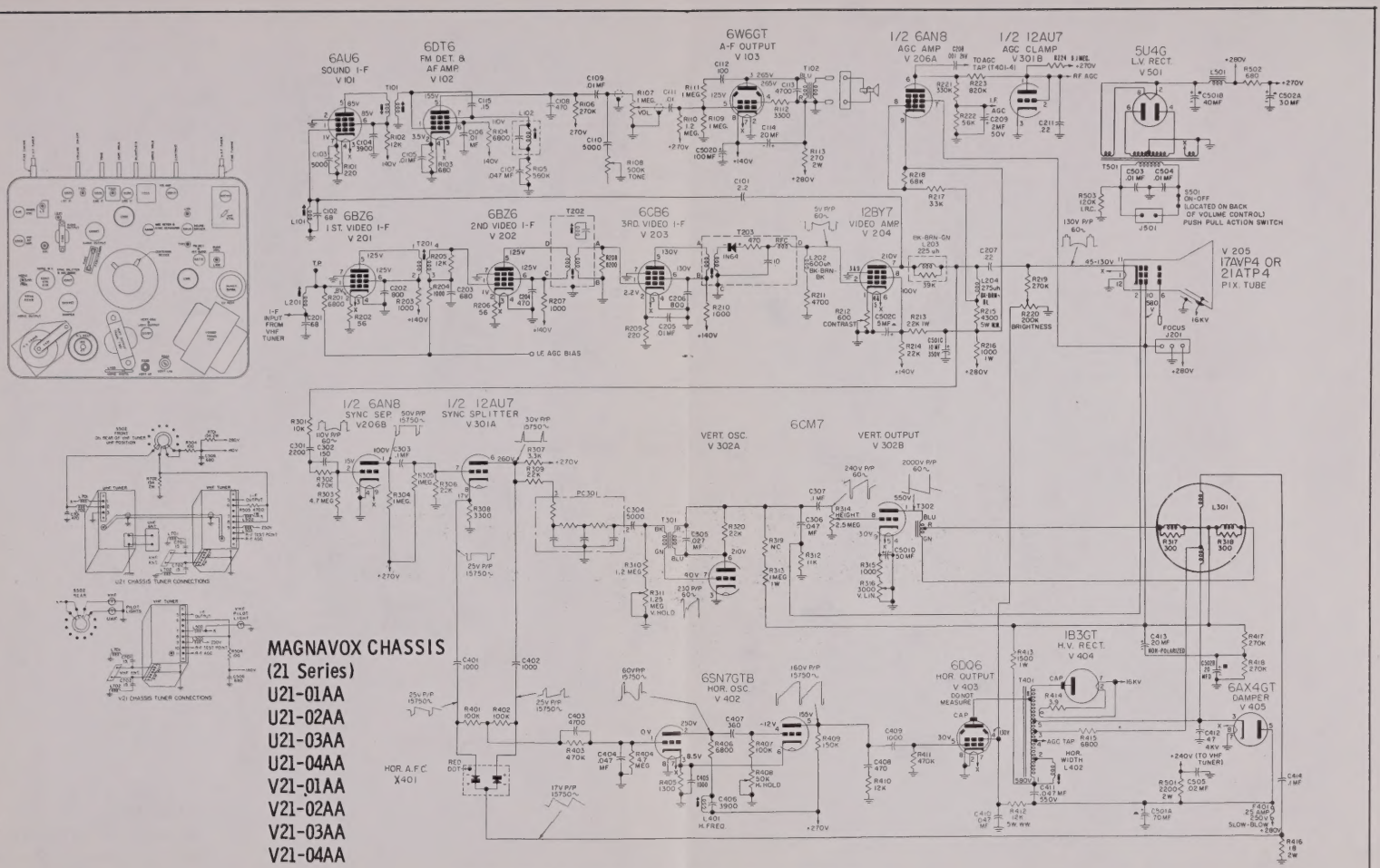
ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	ZENITH PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.071A	212-13	1101A	RS100	6S100	5M1	100A	

MISCELLANEOUS

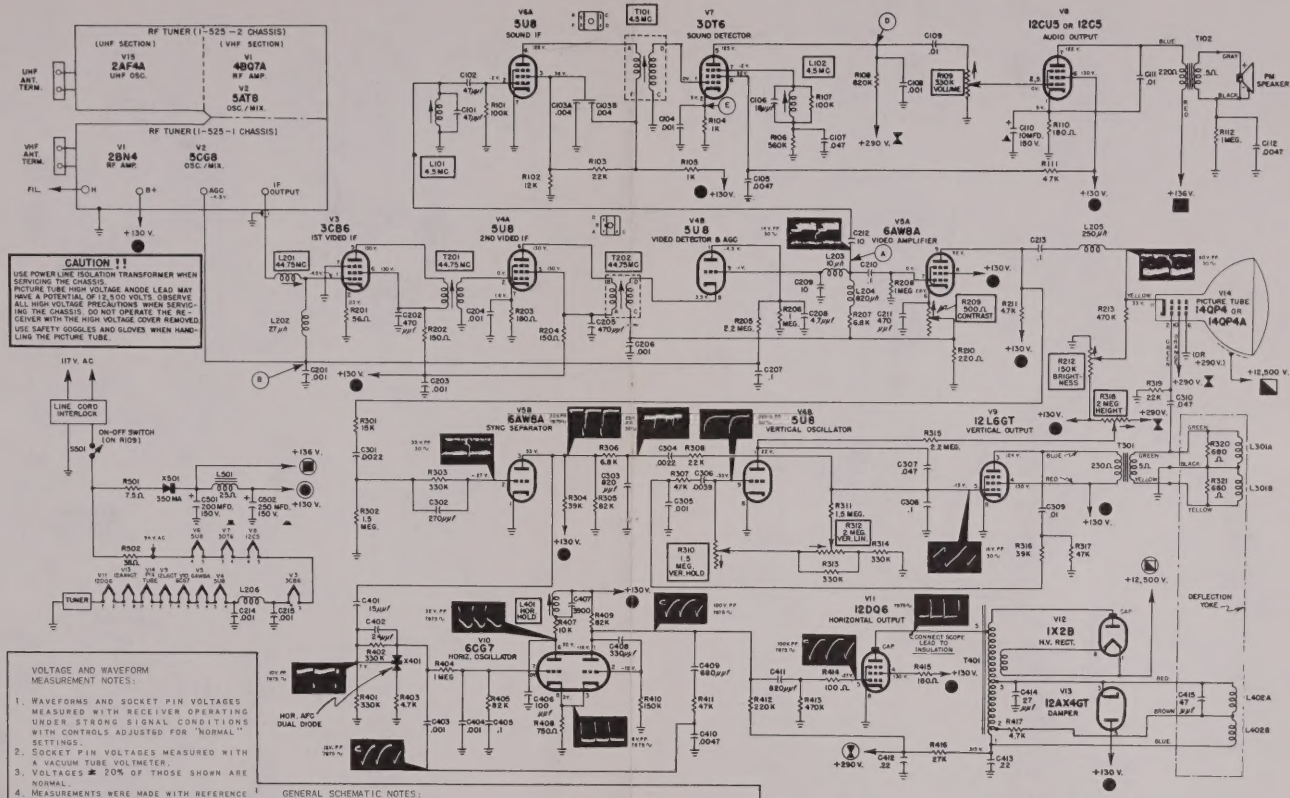
ITEM No.	PART NAME	ZENITH PART No.	NOTES
M2	Dial Light	100-105	#NE51
M3	Tuning Cap.	22-1742	2 Gang (19-460MMF, 15-185MMF)
M4	Switch	85-481	AM-FM (6 Pole - 2 Position; Rotary, Wafer Type)
M5	Clock	S-24363	
	Cabinet	14-1890	Model Y733R
	Cabinet	14-1891	Model Y733G
	Cabinet	14-1892	Model Y733Y
	Knob	46-901	Tone, Model Y733R
	Knob	46-1407	Tone, Model Y733G
	Knob	46-1408	Tone, Model Y733Y
	Knob	46-972	AM-FM Switch, Tuning & Volume, Model Y733R
	Knob	46-984	AM-FM Switch, Tuning & Volume, Model Y733G
	Knob	46-989	AM-FM Switch, Tuning & Volume, Model Y733Y
	Knob	46-904	Alarm, Radio & Auto Off Switch, Model Y733R
	Knob	46-905	Alarm, Radio & Auto Off Switch, Model Y733Y
	Knob	46-985	Alarm, Radio & Auto Off Switch, Model Y733G
	Dial Pointer	59-270	Model Y733Y
	Dial Pointer	59-289	Model Y733R
	Dial Pointer	59-290	Model Y733G
	Crystal	192-202	Clock



DIAL CORD STRINGING



SCHEMATIC COURTESY OF THE MAGNAVOX COMPANY


RF TUNER (1-525-2 CHASSIS)
(UHF SECTION)
(VHF SECTION)
V15 2AF4A UHF OSC.
V1 4B07A RF AMP.
V2 5AT8 OSC./MIX
RF TUNER (1-525-1 CHASSIS)
V1 2BN4 RF AMP.
V2 5CG8 OSC./MIX.
UHF ANT. TERM.
VHF ANT. TERM.
FIL.
B+
AGC
IF OUTPUT
+130 V.
CAUTION !!
USE POWER LINE ISOLATION TRANSFORMER WHEN SERVICING THE CHASSIS. PICTURE TUBE HIGH VOLTAGE ANODE LEAD MAY HAVE A POTENTIAL OF 12,500 VOLTS. OBSERVE ALL HIGH VOLTAGE PRECAUTIONS WHEN SERVICING THE CHASSIS. DO NOT OPERATE THE RECEIVER WITH THE HIGH VOLTAGE COVER REMOVED.
USE SAFETY GOGGLES AND GLOVES WHEN HANDLING THE PICTURE TUBE.
V6A 5U8 SOUND IF
T101 4.5 MC
V7 3DT6 SOUND DETECTOR
V8 12CU5 OR 12C5 AUDIO OUTPUT
T102
PM SPEAKER
V3 3CB6 1ST VIDEO IF
V4A 5U8 2ND VIDEO IF
V4B 5U8 VIDEO DETECTOR & AGC
V5A 6AW8A VIDEO AMPLIFIER
V14 PICTURE TUBE 14QP4 OR 14QP4A
117 V. AC
LINE CORD INTERLOCK
ON-OFF SWITCH (ON R109)
S501
X501
L501
C501 200 MFD. 150 V.
C502 250 MFD. 150 V.
+136 V.
+130 V.
R501 7.5Ω
350 MA
R502 36Ω
TUNER
L206
V5 6U8 SYNC SEPARATOR
V6B 5U8 VERTICAL OSCILLATOR
V9 12L6GT VERTICAL OUTPUT
T301
L301A
L301B
R320 680Ω
R321 680Ω
V10 6CG7 HORIZ. OSCILLATOR
HOR. AFC DUAL DIODE
V11 12D06 HORIZONTAL OUTPUT
V12 1X2B H.V. RECT.
V13 12AX4GT DAMPER
T401
L402A
L402B
+12,500 V.
DEFLECTION YOKE
+290 V.
VOLTAGE AND WAVEFORM MEASUREMENT NOTES:
1. WAVEFORMS AND SOCKET PIN VOLTAGES MEASURED WITH RECEIVER OPERATING UNDER STRONG SIGNAL CONDITIONS WITH CONTROLS ADJUSTED FOR "NORMAL" SETTINGS.
2. SOCKET PIN VOLTAGES MEASURED WITH A VACUUM TUBE VOLTMETER.
3. VOLTAGES ± 20% OF THOSE SHOWN ARE NOMINAL.
4. MEASUREMENTS WERE MADE WITH REFERENCE TO CHASSIS AND ARE POSITIVE UNLESS OTHERWISE INDICATED.
5. AC POWER SOURCE 117V, 60 CYCLE LINE.
6. THE TERMS "30" OR "7875" REFER TO SCOPE SWEEP FREQUENCY USED.
GENERAL SCHEMATIC NOTES:
1. ARROWS ON POTENTIOMETERS INDICATE CLOCKWISE ROTATION.
2. ENCIRCLED LETTERS ARE REFERRED TO IN ALIGNMENT PROCEDURES.
3. VOLTAGE SOURCES ARE INDICATED BY ENCIRCLED SYMBOLS. CORRESPONDING SYMBOLS WITHOUT CIRCLES INDICATE VOLTAGE TIE POINTS.

SYLVANIA
MODELS CHASSIS
14P101 Series 1-525-1, -2
14P102 Series 1-525-1, -2

SCHEMATIC COURTESY OF SYLVANIA ELECTRIC PRODUCTS INC.

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